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Railway Age

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No. 8,000

Design started by Lima Locomotive Works, Incorporated, January 1922.

Engine delivered to the New York Central by Lima Locomotive Works, Incorporated, June 6th, 1922.

Order for 75 duplicates placed by the New York Central on July 24th with Lima Locomotive Works, Incorporated, and 75 with another locomotive builder.

LIMA LOCOMOTIVE WORKS
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Lima, Ohio 17 East 42nd Street, N. Y.

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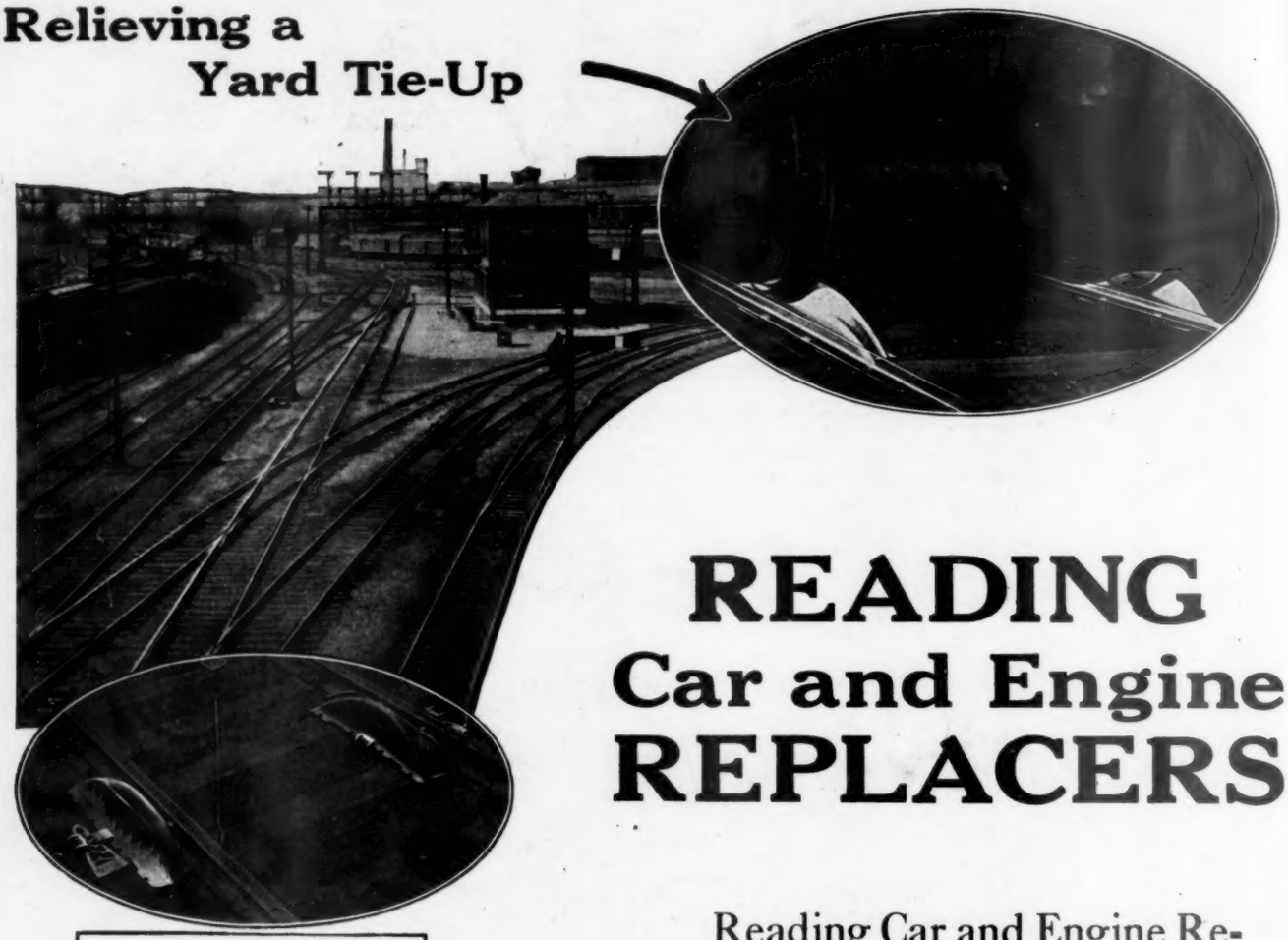

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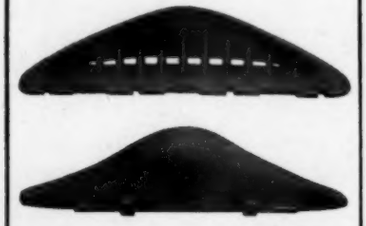
VIEWS of INSIDE REPLACER



VIEWS of OUTSIDE REPLACER

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EDITORIAL

Railway Age

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The Growing Menace of the Highway Crossing

The wrecking of a Soo Line train at Annandale, Minn., with the death of ten persons and the injury of many more as the result of a collision with a motor truck at a highway crossing, is a shocking illustration of a new menace in the highway crossing accident, namely the hazard to the patrons and employees of the railroads. Accidents of a similar nature, but with less gruesome results, befell a Pennsylvania train at Allaire, N. J., on June 16, an Erie express train at Binghamton, N. Y., on June 6, and the "Black Diamond" express of the Lehigh Valley at North Leroy, N. Y., on May 13. Under this same classification is the collision of a passenger train in California with a road roller a month or two earlier. In the early days of railway transportation the onus of the grade crossing was placed upon the railroad. Except in the far west the highways were largely built first, so the coming of the railroads was the cause of the crossing, moreover the vehicles on the former moved at a speed that was very slow as compared with those prevailing on the latter. With the beginning of the new century, these conditions have changed rapidly. Traffic on the highways has changed in volume and character so that there are now many crossings where thousands of highway vehicles pass over the tracks daily at speeds in many cases approaching that of the railway trains. However, until recently the property damage and casualties resulting from collisions of railway and highway vehicles fell almost entirely upon the latter and their occupants, but now we find that the danger is not entirely to the automobile or motor truck. Not only does the driver risk his own life and that of his companions when he fails to exercise care in crossing a railroad track, but he endangers the lives of the several hundred passengers on the train that may be approaching the crossing at that moment. Railway traffic has increased in volume and density during the last two decades, but this increase is not of the same degree as the revolutionary change which has occurred simultaneously in the use of public highways. Consequently the increase in the hazard at highway crossings is a condition for which responsibility must be placed primarily on the users of the highways.

Railway Stocks Advance

Railroad stocks and bonds are again popular in Wall Street. They are participating in the general advancing movement in which all classes of stocks or bonds have participated but, on the whole, within the past week or two they seem to have been receiving more or less special favor. On Saturday, August 19, about 20 railroad stocks reached new high prices for the year. On Monday this advance in prices continued with the result that a large number of railroad stocks and bonds not only reached their highest prices so far this year, but also their highest prices for several years. New York Central common on Monday of this week passed par, this being the first time quotations for this stock have been above par since 1916. The closing price on Monday of Great Northern preferred, 94⅜, was 3⅛ above the closing price on Saturday, 12⅜ points above the price on July 7 and the highest it has been since 1919. Chicago & North Western common, closing at 91¾, was 3⅜ points above the closing price on Saturday, 11¾ points above the price on July 7 and also the highest it has been since 1919. Common stock of the Chesapeake & Ohio, closing at 78⅝, of the Southern Pacific, closing at 95½; of the Northern Pacific, 86⅜; Norfolk & Western 119½; Baltimore & Ohio, 60¼, were among other issues which on Monday reached higher prices than they had reached for a period of several years. The manner in which railway stock and bond quotations have advanced recently is unquestionably partly due to the favorable feeling in the financial district as to the progress which is being made towards winning the shopmen's strike. It is partly the result of the manner in which the railways have handled business in spite of the strike, to the recent improvements in railroad net earnings and to the expectation that a heavy coal and grain movement will greatly increase the favorable net of many of the roads which are already reporting good figures. Underlying the whole situation, however, is the very optimistic attitude that people in financial circles have as to the present condition of the country's industry. It is of extra interest to the railway man that railroad shares should be receiving special favor, it means much for future railway financing.

Are Modern Machine Methods Fully Utilized?

Some railroad shops undoubtedly have installed a few of the best modern machine tools available but these shops are the exception rather than the rule. In most cases modern equipment is conspicuous by its absence and there is apparently a tendency to believe that work once done in a certain way should always be done that way. At least, the attitude toward new ideas and new machines is not particularly receptive. As soon as the strike is settled, mechanical department officers and shop foremen should get away from their work long enough to note the immense strides in machining methods which have been made in recent years by industrial manufacturers. The railroads certainly ought to profit by the best of these modern methods. They are not doing so at the present time according to the testimony of both railroad and machine tool men. A prominent manufacturer of internal grinding machines says: "Our experience indicates that in the majority of cases the railroad repair shops are so far behind in the matter of up-to-date machine shop equipment that it is going to be a long, long time before they get educated up to the class of machinery, such as we are prepared to offer." It is unfortunate that such a statement can be made with any degree of truth. In the case of the particular machines referred to, internal grinders have been largely developed for the automotive field, but they also have a wide field of usefulness in railroad shop work. Space does not permit mentioning internal grinding operations in detail; suffice to say that internal grinders, already installed in a few of the more advanced shops, perform truing operations on many locomotive and car parts far more accurately and in a shorter time than could be accomplished by any other method. In addition, other operations (such as grinding the bores of case-hardened bushings) never possible before the advent of the internal

grinder, can now be performed with ease. The internal grinder is mentioned only as an example of many machines which have been developed in recent years, effecting remarkable economies in machining methods. The railroads, as well as industrial manufacturers, should profit by these economies.

C. & O. Preferred Stock

The Chesapeake & Ohio announced on Monday that it has decided to offer to its common stockholders the right to subscribe at par for new 6½ per cent cumulative convertible preferred stock, series A, to the extent of 20 per cent of their holdings. The issue will amount to about $12,558,500. Action is subject to approval by a stockholders' meeting to be held September 26 and, of course, by the Interstate Commerce Commission. The announcement of this proposal to issue preferred stock is of leading interest at this time because the step takes advantage of a much more favorable financial situation from the railroad point of view in that the financing can be done through an issue of preferred stock instead of bonds. It has been necessary in too great a degree in recent years for the railroads to finance through bonded indebtedness instead of stock. The recent increase in the value of railroad common and preferred stocks—which one trusts is only in its beginnings—now puts a better aspect on the situation. We are likely, therefore, to see during the coming year an increasing tendency for railroads to finance through stock issues. The Chesapeake & Ohio intends to use the proceeds of the proposed preferred stock issue for physical improvements during the next four years. The program, with a total cost given as $16,500,000, includes new roundhouses and shop facilities, additional running and passing tracks, grade reduction, and additional terminal facilities at Hanington Roads. As *Railway Age* readers know, the Chesapeake & Ohio already has an improvement program under way, this and the new plans being necessary because of the rapid expansion of C. & O. traffic in recent years, if anything beyond the ability of the physical plant to handle with desired economy. An additional feature of interest is the earnings of the property. Profiting from serving non-union mines, the Chesapeake & Ohio had a net railway operating income in the first six months of 1922 of $9,644,657 as compared with $5,041,318 in the first half of 1921.

The Railway's Part in Developing Labor Saving Equipment

THERE HAS NEVER been a time when railway officers have been more united or more outspoken than now in their opinion that the roads must install more labor saving equipment. While this feeling has grown with the greatly increased cost of labor the need for more labor saving equipment has been realized for a long time. It exists in all departments, although there is no branch of the service where the possibilities for economies are as great as in maintenance of way work.

Nearly half a million men are employed in these operations which are largely of a character which lend themselves to mechanical performance. Yet the development of machinery to replace men has lagged. One reason for this is the fact that the roads themselves have not set about to foster this development, but have left it to private enterprise and have assumed a more or less disinterested attitude.

It is common knowledge that the way of the inventor is hard. Experience has shown that the path of the promoter of equipment of this character is scarcely less arduous. Every new device must pass through a period of development. This must be carried on under actual service conditions. It is expensive in time and in money, and it requires the sympathetic co-operation of railroad officers interested in perfecting it if success is to be attained.

Many railway men maintain the attitude that the development of labor saving equipment is a commercial problem and that they are not interested until the equipment has reached the stage where its practicability can be demonstrated. This attitude has done more than any other single influence to discourage and to delay the development of the equipment for which these men have expressed a desire and a need, and until it is changed many experienced manufacturers hesitate to make the expenditure necessary to develop a new device.

To suggest that the roads enter more fully into the development of such equipment is not a plea for aid for the manufacturers, but for the roads themselves—for the manufacturers will profit ultimately only as the equipment is able to effect a saving for the roads. The rapidity with which this equipment will be developed will depend directly upon the extent to which the roads co-operate. Mere expressions of a need will not bring equipment—co-operation will.

Future Settlement of Railway Labor Disputes

PRESIDENT HARDING in his message to Congress on the coal and railway shop employees' strikes, said that legal safe-guarding against such menaces to the public as that presented by the shopmen's strike must be left for future consideration. The language used by him indicated, however, that he believes this strike and the developments in connection with it have shown the necessity for amendments of the Transportation Act which will strengthen its labor provisions.

One thing has been made only too clear. This is that the labor provisions as they now stand will not prevent strikes. The first nation-wide railway strike in history has occurred under them. It began almost two months ago, and in spite of all reports to the contrary, there is no prospect of an early settlement of it.

The labor provisions contemplate the submission of all important railway labor controversies to the Railroad Labor Board. They do not, however, fix any penalties for violation of the decisions of the board by either the railways or the employees having been predicated on the assumption that public sentiment would cause obedience to the board's decisions. This theory has been exploded. There have been retail violations of the decisions of the board by railway companies. The shop strike involves wholesale violations of one of its decisions by the employees. The influence of public sentiment has proved smaller than the authors of the law expected.

The question presented to the public, then, is whether—first, to repeal the labor provisions entirely, and leave the settlement of railroad labor controversies to the voluntary action of the parties or to strikes; or second, to leave the labor provisions as they now are; or third, to provide penalties for violation of decisions of the board by either the railway companies or the employees.

There cannot be the slightest question in the mind of any person familiar with the present relations between the railway companies and the railway labor unions as to what would be the result of mere repeal of the labor provisions, which of course would include abolition of the Labor Board. The differences between the companies and the labor unions are now, and promise for a long time in future to be so fundamental and irreconcilable that no important controversy between them could be settled by direct negotiations. Fur-

thermore, while the companies have favored voluntary arbitration, the labor unions are absolutely opposed to it. Therefore, mere repeal of the labor provisions and abolition of the Labor Board probably would result in a series of railroad strikes which would demoralize all business and shake the country's institutions to their foundations. The labor leaders advocate repeal of the labor provisions. They want to destroy private ownership and management and believe abolition of all forms of government intervention in labor disputes would make this easier to accomplish. They are probably right, but in the struggle there would be other things destroyed besides private ownership of railroads.

Experience during the last two and one-half years shows clearly what would be the result of leaving the labor provisions of the Transportation Act as they are. On the whole, it probably would be better to leave them as they are than merely to repeal them. There is some advantage in having an important labor dispute thoroughly investigated and its merits passed upon by a government body on which the public holds the balance of power before the railways and their employees decide upon the course they are going to take, if the decision does not satisfy them. There are also disadvantages, but on the whole they probably are outweighed by the benefit derived from having the issues passed upon and clearly defined before an open break comes. The best course to take might be to leave the labor provisions as they are, provided the local, state and national governments could be relied upon, in the case of strikes, to enforce the laws against violence to property and persons. But experience in the coal and railway shopmen's strikes shows that they cannot be relied upon to do this. Therefore, while it might be better to retain the present labor provisions than merely to repeal them, the facts should be frankly recognized that their retention would be of comparatively little benefit and that probably as time went on they would exercise less and less influence on the course of labor controversies, and finally become practically a nullity.

The only course left open which holds out any promise of comparative peace in the railroad industry is to maintain the Labor Board or establish some other kind of government body to pass on railway labor controversies and to fix, by new legislation, heavy penalties for violations of its decisions by either the railway companies or the railway employees. It may be said that if the laws against violence cannot be enforced, no law to prevent strikes and other violations of decisions of a government arbitration body could be enforced. But the enforcement of the ordinary laws against violence is largely in the hands of officials in local communities where strikers and their supporters are such a large part of the total population that public sentiment either does not make itself felt, or is actually with the strikers. On the other hand, the enforcement of federal legislation requiring obedience to decisions of a federal tribunal would be in the hands of federal officials whose course would be dictated by the sentiment of the country as a whole. Now, there is no question that sentiment in the country as a whole has been against the strike of the shop employees, although it has not been in many local communities where the population is composed largely of railway employees.

The *Railway Age* has never in the past advocated compulsory arbitration of railroad labor disputes. This paper has believed that public sentiment and government officials would be so antagonistic to any party that acted in disregard of a decision rendered by a government body in a railroad labor controversy that in practically all cases such decisions would be obeyed and that at least no wholesale and protracted violations of them would occur. Experience has shown, however, that this belief was without foundation. There may be differences of opinion as to whether compulsory arbitration would work, but everybody now knows, or ought to know, that no other means intended to secure peaceful settlement of railroad labor controversies will work.

Looking Ahead

THERE IS NO QUESTION but what something is seriously wrong in the relations between the men and the managements of most of our railroads. The shopmen's strike is only one evidence of this. Regardless of the causes of this friction and unrest, the responsibility for improving conditions is strictly up to the managements. The underlying causes or forces which are responsible for the present situation have been in process of development for a long time and are natural reactions from past conditions. To correct the difficulties it will be necessary, first, scientifically to study and survey the situation to determine the underlying causes of the trouble and then by removing these causes, one by one, to bring about an improvement.

Too little attention has been paid in the past to the handling of the human element in railway work. Too much stress, comparatively, has been placed upon methods and practices and the development of equipment and apparatus, and too little on the study of human nature and the supervision and control of the men. Meanwhile many of the other industries have gone ahead in studying the personnel of their organizations, with the result that greater and greater stress has been placed upon the necessity of improving the relations between the men and the managements and in educating the men to a larger realization of their responsibilities and possibilities.

The railway executives, for instance, may have looked into John Leitch's experiments in industrial democracy, or into the methods of the Dennison Manufacturing Company, or developments of a similar nature. They have largely failed to utilize the experiences of other industries, however, on the plea that methods which could be used successfully by companies which were engaged in manufacturing were not applicable to the railroad business, and that, moreover, while an industrial concern is concentrated in a few buildings or over a few acres, a railroad organization is spread thinly over a vast amount of territory. The latter fact, however, is all the more reason why railroad managements should give more attention to matters of this kind. As far as the first objection is concerned, it is well to remember that the exact methods or practices involved in a particular scheme of organization are largely incidental in securing results, and that the important factor, after all, is the spirit back of them. One company may secure remarkable results from a certain form of organization, while another under similar circumstances may absolutely fail because those in control use the methods or practices with the idea of taking advantage of the men, while the other organization is dealing fairly with the men in the knowledge that both sides will profit from the transaction if it is honestly carried out.

It is high time that railroad managements gave more serious consideration to the development of strong personnel departments with the highest ideals. Because the difficulties which confront them are far greater than in compact, concentrated industrial organizations, it is necessary that the personnel departments be made even stronger and that they be based upon the highest ideals of successful, modern practices of dealing with men and supervising them. Railroad managements have before them many examples of successful experiments of this kind which have been made by manufacturing companies, even though it is true that only a comparatively few of the industries have awakened to the possibilities in this direction. Because the problem on the railroads is so much greater and more complicated than it is in other industries, it is important that it be tackled fairly and squarely and without any delay. This, if it goes hand in hand with the educational methods mentioned in the comments last week, entitled "The Next Step," will be productive of real and permanent results and will place the railroads on a sound basis so far as the relations with their employees are concerned.

The Coal Strike "Settlement"

AS THE LARGEST purchasers of coal in the country the railways are interested in the so-called "settlement" of the coal strike recently effected by the United Mine Workers of America with certain coal operators at Cleveland. The miners struck throughout the country, except in non-union territory, on April 1 because they could not reach an agreement with the mine operators regarding wages and certain other matters. The agreement reached Cleveland on August 15 was not really a settlement, but a complete surrender by the operators. They agreed to put the miners back to work until April 1, 1923, under the same working conditions and wages as those in effect prior to April 1, 1922. No provision for arbitration was made. A "fact finding" committee is to be appointed, but there is nothing in the arrangement which binds either party to abide by the facts found, whatever they may be.

The complete and abject surrender made by the operators involved, most of whose mines are in eastern Ohio, means that reduction in the wages of the miners, and therefore reductions in the price of coal to the public, are indefinitely postponed. Since no means has been adopted for settling future controversies, it seems almost certain, if this agreement becomes the basis for agreements to open up the mines generally, that another nation-wide coal strike will begin on April 1, 1923. The public must bear the results of one coal strike which has lasted almost five months, including a very serious shortage of fuel; it must in addition pay even higher prices for coal than it would have had to pay if the strike had not occurred; and it must face the prospect of a similar struggle and resulting shortage of coal next year.

There are many operators of coal mines in the country who have not been willing to make such a pitiful surrender as was made by those who signed the Cleveland agreement. The Illinois Coal Operators Association, for example, has held out for the adoption of some plan of arbitration as a condition of putting the miners back to work at the old wages. The miners' union continues, however, to reject all proposals for arbitration, and there is grave danger that sooner or later the miners throughout the country will be put back to work at the old wages, and without any agreement for arbitration of the question of what wages shall be paid in future. The operators in Illinois and some other states find themselves confronted with state laws of such a character that they practically give members of the miners' union a monopoly of the right to work in the mines.

President Harding in his message to Congress on the coal and railway strikes recommended the creation of a commission "to make searching investigation into the whole coal industry with provision for its lawful activities and the bestowal of authority to reveal every phase of coal production, sale and distribution." Doubtless it is desirable that such an investigation should be made. Some very important facts have, however, been made clear by the two great coal strikes of 1919 and 1921. One is that a single labor organization, the United Mine Workers of America, has acquired such vast power that it can stop the production of coal by most of the mines of the country for an indefinite period. Another is that this union, rather than arbitrate, is perfectly willing to put strikes into effect which will demoralize and even bring almost to a standstill the entire business of the country and cause disaster and suffering to all its people. It has been demonstrated by actual experience that the United Mine Workers of America can put into effect and carry out strikes which will do more harm than any kind of a strike on the railroads, except possibly one by the employees actually engaged in the operation of trains.

The national government and almost every state government have asserted and exercised the right to regulate or even destroy, for the protection of the public, combinations of capital which it has been feared, reasonably or otherwise, would be able to fix prices in disregard of supply and demand. But high prices may result from excessive costs of operation due to excessive wages and inefficiency of labor as well as to the exaction of excessive profits by the capitalists.

The prices of coal help to determine the expense of operating every business. The cost of coal is an especially large item in the expense of operating manufacturing plants and railways. Therefore, if the public allows the miners to maintain a nation-wide combination which can successfully demand excessive wages, the effect upon the cost of living will be exactly the same as if it allowed the coal operators, or any other large class of capitalists, to maintain a combination to extort excessive profits.

Some years ago when the government was engaged in a great struggle with combinations of capitalists, President Roosevelt said: "We must shackle greed as we have shackled force." The words of his statement should now be transposed so that it will read: "We must shackle force as we have shackled greed." The miners have relied upon force to win their strike. They have not only struck, which is the use of a negative form of force, but they have resorted to every form of violence, which is a positive form of force, to prevent others from working where they would not work. The same things have been true, of course, of the striking railway shop employees. Force has won the miners' strike. The success of its use in this instance will encourage its use in other cases.

What does the successful use of force in such a case mean? It means simply that the stronger impose their will on the weaker, regardless of the rights involved. That is what it always has meant, and always will mean. Force settles nothing except which of two combatants is the stronger. The outcome of the coal strike has demonstrated that the United Mine Workers of America are stronger than the coal operators. Experience has shown that there is no limit to what any body of men will seek to take by force as long as the use of force is successful. Therefore, the United Mine Workers of America may be relied upon to take more and more by force as long as their use of force is successful. But in the long run what they take from the mine operators will be taken from the public, because everything the miners take from the operators is necessarily taken by the operators, in turn, from the public.

It is only a matter of time until shortage and high prices of coal will bring this fact home to the public. There will then be a struggle which the public cannot fail to recognize as being between the miners and itself. What will be the outcome of that is uncertain. The miners' union may be able to get support from other labor organizations which will enable it to triumph over even the public. In that case, the sovereignty of the labor unions will be substituted for that of the people. Those who exercise the greatest power in a country are sovereign, no matter what its constitution and laws may say.

Since a struggle between the miners and the public is inevitable sooner or later, the sooner it is precipitated the better it will be for all concerned. The public, in self protection, would precipitate it between now and April 1, 1923, by the passage of a law providing for compulsory arbitration of labor disputes in coal mines. If the public cannot compel settlement of labor disputes in the coal mines by peaceable means, if it cannot prevent protracted strikes such as those of 1919 and 1921, if it cannot prevent and punish violence such as occurred in these strikes, then the people have lost their sovereignty in the United States to the labor unions.

Letters to the Editor

[*The* RAILWAY AGE *welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about* 250 *words—are particularly appreciated. The editors do not hold themselves responsible for facts or opinions expressed.*]

The Use of Operating Statistics

ST. LOUIS, MO.

TO THE EDITOR:

I have read with interest the material which has recently appeared in the *Railway Age* relative to the proposed revision of the I. C. C. operating expenses classifications and requirements for operating statistics.

The Interstate Commerce Commission can only exercise a general supervision through the accounts and statistics. The analysis of such returns must necessarily be entrusted to specialists, with no direct interference with the free initiative and responsibility of local management. Present classifications were prescribed by the commission only after full investigation, consideration and co-operation with railroad accounting officers, no doubt with the thought of designing something that would clearly reveal all of the operating conditions and at the same time create a base for such detailed statistics as the commission and railroads might from time to time require.

The suggestion has been made that our present classification is much too elaborate and calls for wholly unnecessary segregation. I say unnecessary because many of the classifications are not used, but I hardly see how the present classification can be simplified without a reduction in the number and this certainty ought to be done without reducing the amount of necessary data.

To analyze readily a statement or report with its voluminous information is difficult. I am, therefore, prompted to suggest a grouping of the related factors in separate statements or charts without including factors of minor importance. The prime factors must be developed as conditions and circumstances warrant. They should be prepared and presented in a form that will enable one, without studying a mass of figures, to determine tendencies. Should the tendencies be of a character requiring investigation, then, of course, one must go to the details. There must be a constant improvement of conditions and the problem is one of securing authoritative information concerning:

1. The effectiveness of the system in use.
2. The performance which can be expected of changed methods or the introduction of new devices.
3. The cost of the change.

Naturally, to obtain this sort of information, there must be a large amount of data, both accounting and statistical.

Statistics as now compiled show the sources of income and the channels of expenditures. An equal interest in both is paramount to a healthful situation. All statistics should be used to the greatest advantage looking toward greater sources of revenue and economies in operation. Many know the extent of the earnings but I dare say few realize the magnitude of the expenditures; that is, where the money goes after it is earned. These facts may be learned through operating statistics now compiled, if advantage is taken of them. Aside from this, they are valuable for the analysis of existing conditions but, in many cases, furnish little information as to what would happen under other and different conditions. Thus the predetermination of operating results, which is most important from the standpoint of orderly and improved operation, is largely dependent upon the researches of the individual and a co-ordinated organization. Vast numbers of both related and unrelated figures are compiled, but they are not a panacea to the solution of general problems. A statement of the expenses under fixed conditions will not ultimately suffice but the change of expenses under certain varying conditions is needed. If such data were available, the study and analysis of operating results would be more truly a diagnosis, rather than a post-mortem.

A carefully thought out program and diligent research and investigation through the medium of statistics will bring out numerous aspects of the economies of operation that merit attention. It is, therefore, not logical to reduce the amount of information available for use by the operating officers, particularly at a time when the slight margin between revenues and expenses makes it absolutely essential that they be provided with all the data which can be furnished at a reasonable expense. This is particularly realized when an attempt is made to determine the cost of some particular class of traffic and this feature alone, to my mind, is quite important.

It has been suggested that reports as used do not give full information as to railroad operations, which statement may have been prompted by the thought that they are not in sufficient detail or properly assembled by classes to permit proper comparison, one road with another. In the first place, this is an impracticable suggestion. Second, considering the fact that greater efficiency is always uppermost in the mind of the operating manager, a complete segregation of the several items of operating costs into a number of composite units for publication uniformly would be of no value as a comparison with like units or factors of other roads, either as to determining the efficiency of operation or as to the value of the road's securities, when the physical characteristics of the property compared were unlike and the kind, density and proportions of tonnage, besides the speed, number and weight of trains, were different.

A comparison of the operating and maintenance costs of one railroad with another, of any one of the many factors which go to make up the aggregate, even though the physical and traffic conditions of both roads were somewhat analogous, would not reveal a difference sufficient in amount to enable one to form an intelligent judgment as to the respective efficiencies or as to the wisdom of investing in the securities. This could better be determined by a comparison with the aggregate amount expended by one road in relation to its gross earnings, for the same given period, or with that expended in previous years, or with the aggregate expenditure of any road having similar physical features, due consideration being given to the respective trend and volume of traffic, weight and speed of trains, and the prevailing weather conditions, etc. Of course, the expense of all of these several factors which make up the aggregate are carefully guarded and looked after in detail by the railroad manager and any further segregation for such comparative uses is liable to involve an expense far exceeding any value they might have.

Where a diversity exists in the physical and traffic conditions, a comparison of the operation of one road with that of another has very little value in determining the efficiency of management. Even on the same road, great differences in operating results may be shown from year to year, according to economic, rate or weather conditions, affecting the trend and volume of traffic and the facilitation of operation. The ratio of operating expenses to gross operating revenue is regarded as a criterion of the efficiency of the management and comparisons between different roads of this ratio are oftentimes made with the resultant impression that the road with the lowest ratio of expense is better managed. Such an impression might be altogether wrong as there may

have been different conditions in operation and traffic affecting the one road and not the other. One of the many factors that would affect this working ratio is the commodity traffic rate. There might be a predominating class of freight traffic on the road showing the low working ratio producing a rate per ton-mile much higher than that produced by the other. The rates in effect play a more important part in the results than any increased efficiency obtainable.

Statistics are quite necessary and must be of the kind and character to establish facts. The first and primary object of these facts is their use. No statistics, however, should be compiled unless they serve a useful purpose. Neither should it be assumed that the use of statistics alone will correct the evil and produce the desired results but, on the other hand, it is a question of adapting ourselves to the operating and economic conditions and then co-ordinating all facility units. Economy means the wise spending of money or time, good stewardship and careful administration. All agents and employees, including the officers and colaborers, must have a keen sense of duty and realize that each is just as important in the operation and success of the great institution as the locomotive. The last requirement is of great importance for, unless all the different operations work in harmony, the machine, as a whole, will not run smoothly. There should be personal interest not only in individual success but in the ultimate success of the railroad.

C. D. HICKS.
Executive Department, Missouri Pacific.

The Conservatives of 1851, and of 1922

HARRIMAN, N. Y.

TO THE EDITOR:

Do you recognize this place? Few letters from summer resorts reach your desk, I presume; but that is no reason why the bracing country air should not stir *me*. The most notable structure in Harriman is the monument to Charles Minot, superintendent of the Erie Railroad, who in 1851 sent the first train order. (It was not a "31" nor a "19"; but it was a full-fledged meet order.) The dedication ceremonies of the monument were reported in the *Railway Age Gazette* of May 10, 1912. Minot, on a westbound passenger train which had lost its right to the road, telegraphed from here to the agent at Goshen, 13 miles west, to hold the superior eastbound train; and then ordered the westbound train to proceed. He was obliged, however, to mount the locomotive cab himself because the engineman refused to act on such an unheard of order.

You may, very likely, class me (with other summer-resort writers) as one who, when loafing in a quiet mountain resort, forgets the usual business perspective and writes sentimental stuff to fill up space; but if you do, you will be wrong; for I am intensely practical. We have still to learn a part of the lesson of the Minot incident.

When we realize that, to the experienced and skilful telegrapher, the words of the person at the other end of ten or a hundred miles of wire are as personal and human as they would be to you or to me if the means of communication were a telephone instead of a Morse relay or sounder, the slowness with which that Erie engineman grasped the idea that there had been a real and reliable conversation between Turner (now Harriman) and Goshen seems almost incredible; but *we of the twentieth century are retarding progress today* in just about the same way. And this Erie engineman was not the only rusty-minded conservative of the 19th century. The telegraph had been demonstrated in 1844, and Minot had, no doubt, scores of examples in his own experience assuring him that the miracle of instantaneous communication was a reality; but the average railroad officer of that time was so unprogressive that to us today he seems to have been absolutely fossilized. As late as 1871, the superintendent of the Eastern Railroad, of Massachusetts, said that he could not bother with such a cumbersome aid as the telegraph in directing train movements.

How very dull the railroads of this country were to the advantage of the telephone! I really believe England was in some respects ahead of us. C. A. Hammond used the telephone for transmitting train orders in Massachusetts about 1883, but it was 1898 before any big road got that far; and still ten years more before the objectors were fairly silenced.

But it is your editorial of August 19, on the collision at Sulphur Springs of August 5, 1922, which I have just been reading, that has brought this question to my mind just at this time. How very absurd to put up a separate signal to stop trains for orders when you already have a signal, of the right kind and in the right place, to be used for stopping them for all other purposes. Or, to put it in another way, if the train order signal was there first, how pig-headed to keep on using it just because you love it for its honorable and venerable reputation in the past. And yet Porter, Ind., and Riverside, Mo., are only two of hundreds of such examples of wasteful and complicated arrangements which are perpetuated simply for lack of a little reasonable enterprise.

The collision at Leeds, Mo., calls attention to similar lessons. Your little homily, in connection with that disaster, on the fundamentals of the block system (August 19, page 317) only brings out what was well known in England in 1860, before we boastful Americans had even thought of using the block system; yet "progressive" American railroad presidents, who furnish baseball news by radio for passengers in their palatial trains too impatient to wait until the train reaches the next station, continue today, 62 years afterward, to try to run trains safely without any block system at all.

Surely, the old fogies are not all dead!

And the Sulphur Springs collision conveys another lesson. Refer back to your issue of April 22, 1921, page 978, and read the clear and forceful argument for the audible signal presented by J. B. Latimer, signal engineer of the Chicago, Burlington & Quincy. No one could ask for a better demonstration of the usefulness of an audible signal (either at the side of the road on a post, or in the cab of the locomotive) than the circumstances of this Sulphur Springs collision. Thirty-three passengers were killed because an engineman went past one or more signals without seeing them; and all the consolation that the traveling public can get out of this fresh illustration of conditions which are at least 33 years old is that, after studying the problem of collision prevention for 33 months (counting from the time when the United States Railroad Administration committee wrote its report on the subject), the principal railroads of the country profess themselves to be still unable to decide what to do about it! That U. S. R. A. committee examined 37 automatic train stop devices, but remained silent as to what it thought of 37 years' experience, in considerable measure successful, on the Northern Railroad of France with an audible signal. And this French signal, in an improved form, is now being introduced on all of the larger railroads of that country.

The audible signal is not so comprehensively perfect, on paper, as are some of the automatic train-stops; but who can doubt that if the Missouri Pacific had heeded the lesson from France in 1912 it would have been saved this humiliating experience in 1922?

Who denies that an appeal to the engineman's eyes and ears more than doubles the factor of safety as compared with an appeal to eyes alone?

IRRY.

Executives Reaffirm Position on Seniority

Possibility Opened for Separate Agreements—Situation Reverts Back to Roads for Individual Action

THE RAILWAY executives, assembled at the Yale Club, New York, on Wednesday for their third meeting called in connection with the railway shopmen's strike, reaffirmed by a practically unanimous vote their previous stand on the seniority issue and declared their belief that mediation with the committee of the brotherhood leaders would produce no favorable results "unless the representatives of the striking shop employees are prepared to accept that position."

On the understanding, however, that the shopmen might be willing to consider the possibility of settlements with individual roads a group of about 25 carriers said to be in a position to take back all of their striking shopmen, have continued conferences with the mediatory brotherhood leaders to see if it is possible to reach any favorable results.

The action of the meeting of the Association of Railway Executives in practical effect eliminates the possibility that the strikers may be able to bring the strike to a close by a country-wide agreement including all of the railroads. It accomplishes this result because it is hardly possible that the strikers will be willing to meet the conditions laid down by the executives in their stand on seniority. The effect of the meeting is also to act in the direction of reverting the matter of the strike back to the individual roads. It indicates without much question the belief of the executives that the strike has been won and that the problem now is for each road to continue building up its forces and in general to work out its own situation in the light of its particular conditions.

One of the developments of the meeting was the announcement that the conference between the committee of executives and the leaders of the brotherhoods, the latter of which have been acting as mediators for the shopmen, came to no definite conclusion as to proposals or plans at the sessions in New York on Thursday and Friday of the preceding week. It was expected that the Wednesday meeting might bring out considerable discussion and a division of opinion among the executives. This division of opinion failed of realization. The vote in favor of the resolution reaffirming the executives' stand on seniority was 254 to 4, the only executive voting against it being S. Davies Warfield, president of the Seaboard Air Line. Mr. Warfield is chairman also of the National Association of Owners of Railway Securities.

The meeting assembled at the Yale Club at 10 o'clock Wednesday morning. After discussing the results of the conference between the committee of executives and the train service leaders—to consider which the meeting was called—the resolution was adopted and its sense reported to the brotherhood heads. They, being invited to the meeting to give their views, accepted. In stating his views, L. E. Sheppard, president of the order of Railway Conductors submitted a memorandum which suggested the replacement of the striking shopmen with status as of June 30, the day before the strike became effective. He also intimated the possibility of separate settlements. The suggestions in the memorandum were, of course, rejected. Several of the roads, however, desiring to follow out the idea of the separate agreements remained after the meeting itself had adjourned. A committee of them, with Hale Holden, president of the Chicago, Burlington & Quincy, as chairman, reassembled in the evening and discussed further with the mediators the possibilities of the suggestion made. A statement authorized by T. DeWitt Cuyler gave a complete report of the main meeting as follows:

Official Report of the Meeting

The various suggestions made by the chairman of the train and engine service brotherhoods, as voluntary mediators, in respect to an adjustment of the pending strike of the shopcrafts, were fully considered, and the following preamble and resolutions were adopted by a vote of 254 to 4:

"The committee appointed at the meeting of the railroads on August 11 having been requested by the chief officers of the five train service organizations to meet them as mediators, reported to the meeting today that conferences in accordance with this invitation were held in Washington on August 12 and in New York on August 17 and 18.

"At these conferences the position of the railroads, as reflected in the action taken on August 11, was fully discussed, but the committee has reported that the officers of the train and engine service brotherhoods were unable to bring about an agreement on the part of the shopcrafts.

"At the conclusion of the conference on Friday, August 18, an adjournment was taken to enable the committee to report the result of the conferences to their associates, which report has been made today.

"After discussion, the following resolution was adopted:

> "RESOLVED, That the committee is authorized to meet the representatives of the train and engine service brotherhoods again and state to them that the railroads adhere to the position heretofore taken, namely, that 'the striking former employees cannot be given preference to employees at present in the service, without doing violence to every principle of right and justice involved in this matter and without the grossest breach of faith on the part of the railroads to the men at present in their service. Under these circumstances it becomes apparent that the railroads cannot consider any settlement of the present strike which does not provide protection in their present employment, both to the loyal employees who remained in the service and to the new employees entering it.'
>
> "RESOLVED FURTHER, That unless the representatives of the striking former shop employees are prepared to accept that position, the railroads are unable to see wherein the efforts at mediation by the chief officers of the brotherhoods can harmonize these fundamental differences.
>
> "RESOLVED, That the railroads express their appreciation of the friendly intent and the earnest efforts that have been made by the chief officers of the train and engine service brotherhoods to compose the present situation, and express their sincere regrets that the situation has not permitted a successful termination of these efforts."

These resolutions were at once communicated to the mediators by a committee appointed for the purpose. Upon delivering and reading the resolutions to the mediators they requested that they might appear personally before the member-roads, which request was, of course, granted. The mediators thereupon joined the executives assembled at the Yale Club, and made statements embodying their views of the situation.

In the course of Mr. Sheppard's remarks, he, on behalf of the mediators, submitted a suggestion in the form of a memorandum which is fully quoted in my letter given below.

They disclaimed any knowledge as to whether this suggestion would be accepted by the striking shopmen, but requested that it be considered by the association, and also that it be presented to any individual road that might be inclined to make a separate settlement. To this communication the association directed the following answer to be made today to the chairman of the five train service organizations, which was accordingly done:

"Gentlemen:

"The carriers have carefully considered the tentative suggestion you have today made reading as follows:

> "First: All men to be reinstated in the position of the class they originally held on June 30, 1922, and as many of such men as possible are to be put to work September 1, at present rates of pay, and all employees who have

been on strike to be put to work or under pay, not later than October 1, next, except such men as have been proven guilty of destruction of railroad property or convicted of crime; ordinary cases of assault and battery the result of personal encounter are to be disregarded.

"Second: If a dispute arises as to the relative standing of an employee or employees that cannot be otherwise adjusted by the carrier and said employee or employees, the matter shall be referred to the United States Railroad Labor Board in accordance with the Transportation Act of 1920 by the organization, the employees or the carrier in the interest of any employee who may be aggrieved.

"Third: No intimidation nor oppression shall be practiced or permitted as against any of the employees who have remained or have taken service or as against those who resume service under this understanding.

"Fourth: All suits at law now pending as the result of this strike to be withdrawn and cancelled by both parties.

"The use by you in this suggestion of the term 'reinstated' goes to the root of the differences between us.

"You have repeatedly explained to our committee that this means an acknowledgment on the part of the carriers that the men returning to work under your proposition above quoted will be senior to the new men employed since July 1, 1922, and senior to the old men who remained in the service to the extent that the returning strikers were senior on June 30, 1922.

"As this acknowledgment would doubtless control the decision of the Labor Board on a dispute submitted under your second paragraph as to seniority, and oblige it to render a decision against the old men who remained and the new men who entered the service, we cannot accept it.

"THOMAS DE WITT CUYLER, Chairman."

It may be, from the suggestion above mentioned of the mediators, that they will recommend to the leaders of the striking shopmen to permit settlements with individual roads, authority to make which has hitherto been declined by these leaders.

While the basis suggested by the train and engine service brotherhood leaders interpreted as it is understood the brotherhood leaders interpret it, was not acceptable as submitted, a group of roads have determined to ascertain whether or not such modifications of it may be obtained by further negotiations between this group of roads and the mediators, as will make the proposal acceptable to at least some of the roads under their special conditions, which, in that event, would consider the making of separate and individual settlements.

Statement by Bert M. Jewell

The vote and action of the executives received the condemnation of Bert M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, in the following statement:

The Association of Railway Executives have "closed the door." The unions have offered every concession within reason to end the strike and to save the public from a breakdown of transportation; but the executives have made none. On the contrary, they have since the strike began raised an entirely new and irrelevant issue of their own—seniority; and by their refusal to recede from their position have made a settlement impossible at this time. The responsibility for what will happen now rests wholly upon them.

The shopcraft's employees voted in June for a strike to establish a living wage and decent working conditions. The Association of Railway Executives have now voted for a lockout to smash unionism on the railroads and to eliminate collective bargaining from the industry.

The men have been ready at all times to meet the executives to bring about an honorable settlement. We expressed our willingness to do so to the Labor Board in Chicago. We accepted President Harding's terms of settlement of July 31. The executives, however, have consistently and arrogantly blocked every move to end the strike. They have done so with the plain intent of eliminating unionism from the railroad shops as the first step in the elimination of unionism from the industry as a whole. They refuse, even at the President's direct request, to take back striking employees with seniority rights unimpaired, in order that they might separate free and courageous men from their jobs and thus disintegrate the employees' organization. They even try to justify their refusal on the ground of promises of permanent employment to strikebreakers which they have not made.

The shopcraft employees are now fighting for their very existence and the existence of the other railroad employees, as well as for justice and right. This last misguided action of the executives makes our victory secure. The executives today have not a leg to stand on before the people.

The 400,000 striking employees accept the challenge of the railroads. We will redouble our efforts, confident of success.

Roads Discuss Separate Agreements

Hale Holden, president of the Chicago, Burlington & Quincy, spokesman of the approximately 25 roads which continued negotiations with the brotherhood leaders acting as mediators issued a statement in the afternoon in which he said: "At the conclusion of the general meeting of the Association of Railway Executives, the officers of a considerable number of individual railroads remained in further conference over the proposition submitted by the brotherhood leaders. There was no dissent from the action taken at the main meeting."

A committee of these roads headed by Mr. Holden as chairman reassembled in the evening to go over the matter with the brotherhood mediators. Up to the time of going to press announcement of what may have taken place at this meeting was not forthcoming. After the break up of the meeting Warren S. Stone, president of the Brotherhood of Locomotive Engineers contented himself with the statement that "Mediators don't talk." Daniel Willard, president of the Baltimore & Ohio, speaking for the group, said that there would be another conference Thursday. He is quoted as adding "If you want to see us settle the strike, just give us a chance."

Until the official report of the conferences is made public it is useless to conjecture concerning the matters discussed. This is made difficult in any event because Bert M. Jewell on Wednesday evening denied that the shop leaders had authorized the brotherhood leaders to make any suggestions as to possible separate agreements. Mr. Jewell reiterated the policy of the shop leaders as being opposed to any settlement except on a national basis—thus continuing the policy followed out in the fruitless negotiations with the Baltimore & Ohio, the Southern and other roads which have offered to negotiate separately.

The roads involved in the discussion were understood to be those that are in a position to take back all of their striking shopmen. It was plainly indicated, however, that any agreement they might make would be in strict accord with the sentiments adopted by the general meeting on matters of seniority. The roads included the Chicago & North Western, the Chicago, Milwaukee & St. Paul, the Chicago, Burlington & Quincy, the Northern Pacific, the New York Central Lines, the Erie, the New York, Chicago & St. Louis and Lake Erie & Western, the Chesapeake & Ohio, the Norfolk & Western, the Buffalo, Rochester & Pittsburgh, the Norfolk Southern, the Wheeling & Lake Erie, the Lehigh & New England, the Chicago, Rock Island & Pacific, the Minneapolis & St. Louis, the Louisiana & Arkansas and the Alabama & Vicksburg and Vicksburg, Shreveport & Pacifis, etc.

Conference with Train Service Leaders

On Thursday, a week ago, as briefly reported in last week's issue of the *Railway Age*, a committee of the Association of Railway Executives met at the offices of that organization the five leaders of the train service brotherhoods who had offered their services as mediators. The conference did not conclude its discussion on Thursday and reassembled Friday morning.

There were in attendance representing the railroads: T. De Witt Cuyler, chairman of the Association of Railway Executives; W. W. Atterbury, vice-president of the Pennsylvania; Howard Elliott, chairman of the Northern Pacific; Hale Holden, president of the Chicago, Burlington & Quincy; Julius Kruttschnitt, chairman of the Southern Pacific; W. L. Mapother, president of the Louisville & Nashville; C. H. Markham, president of the Illinois Central; A. H. Smith, president of the New York Central; Carl Gray, president of

the Union Pacific, and A. P. Thom, vice-chairman and general counsel of the Association of Railway Executives.

The five brotherhood leaders were Warren S. Stone, president of the Brotherhood of Locomotive Engineers; L. E. Sheppard, president of the Order of Railway Conductors; W. N. Doak, vice-president of the Brotherhood of Railway Trainmen; E. H. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen, and T. C. Cashen, president of the Switchmen's Union.

B. M. Jewell, president of the Railway Employees Department of the American Federation of Labor, and other of the labor leaders, were in town but were not called into the conference.

Like the session on Thursday the activities of the following day were shrouded in secrecy. Following the close of the conference on Friday afternoon, the following announcement was authorized by T. De Witt Cuyler, chairman of the Association of Railway Executives:

"The conference between the leaders of the five train service organizations, acting as mediators, and a committee of railway executives, has been adjourned until some day next week not yet designated. Prior to further conferences the committee of railway executives will consider further the suggestions made and consult with their associates. The discussions which have taken place have been marked by commendable public spirit and frankness on both sides, and this recess is taken without any diminution of this attitude."

The non-committal character of this statement, combined with the fact that the mediators on both sides were sworn to secrecy, gave little inkling as to what had taken place at the conference and still less as to what the next step in the mediations would be. It was made known, however, that the plan was to refer the matter back to interested parties. This information for the moment seemed somewhat inconclusive until it was found out that the procedure would be to call a general meeting of the member roads of the Association of Railway Executives; that the committee of railway heads was to report its action to the meeting for the latter's decision, and that then the matter would again be taken up with the train service leaders in further conferences. Confirmation that this would be the plan of action was forthcoming when announcement was later made that the executives' meeting had been called for Wednesday of this week.

Labor Leaders' Publicity

Practically no information whatever was forthcoming from any of those in attendance at the conference as to what matters had been discussed, as to what line the discussion had followed, or as to what decisions may have been made. Authoritative statement was made that the conference had been characterized by an attitude of friendliness and that each side had been given an opportunity to receive the views of the other and enabled to understand how far each side was ready and willing to go to bring about a settlement. Beyond this, no other information was available. The labor leaders to whom the information had been imparted by the mediators did not, however, prove so reticent. At any rate, certain of the labor representatives, who refused to permit their names to be quoted, did give the press an idea as to what had been done. Naturally, under the circumstances, they took advantage of the situation, purposely or otherwise, and painted the situation so that it would look most favorable from their own point of view. The story they gave later proved incorrect but it was the story that appeared in Saturday's papers.

Briefly the story was to the effect that the conferees for the executives had agreed to propose a settlement embodying some kind of a gentlemen's agreement whereby the strikers would be taken back with their seniority rights to be adjusted ultimately to the satisfaction of all. The details of the manner in which this is to be done were, however, lacking. Under the circumstances any guess might be in order. It was, however, pointed out that there was no idea of any 1, 2, 3 plan of seniority arrangement such, for instance, as was embodied in previous proposals that (1) the shopmer who remained on the job should outrank (2) those who struck, to be followed in ranking by (3) the new men. The plans evidently called for the returning to work of all the strikers and the retaining of the new men as well, it being felt that there would be work enough for all as a result of the recent expansion of traffic and the delayed repair work. It was also pointed out that any 1, 2, 3 plan might be impractical, particularly if all the strikers returned in a body and were given the same seniority. The idea was further amplified with the information that the plan was such that neither side could claim a victory nor would have to admit defeat on the seniority issue. The labor leaders, naturally, put the situation in the best light from their own point of view by saying that it would permit the railways to get out of a difficult position but in a manner which would permit the railway executives to save their faces.

"P. & A. Photo"

Railway Executives and Labor Leaders at Peace Parley

A Labor View

Carrying the idea further, the labor leaders gave out the impression that there was involved some kind of a concession on the part of the railway executive conferees. It was stated that the executive conferees had agreed to these concessions on Thursday but that when they returned to the meeting on Friday morning they had thought it better not to act on their own responsibility but rather to refer the matter back to their fellow executives for the opinion and action of the latter.

Naturally the foregoing was a close approach to speculation. It proved to be entirely in error but that does not

avoid the fact that it formed railroad history for one week at least.

President Harding's address, which was delivered to Congress on Friday, after a day's delay waiting for possible results from the New York mediation conference, was not, insofar as can be learned, a subject of discussion at the conference. Neither was it discussed openly by the labor leaders assembled in New York at the time. Mr. Gompers in Washington, however, took the opportunity to express his opinions—adverse to the address—to the newspaper men. A further element of interest in connection with the New York conference was the fact that but little opinion was in evidence regarded the Labor Board. Although it was a statement by Chairman Hooper and a resolution of the Labor Board which largely brought up the question of seniority, this factor seems for the moment to have been forgotten. Similarly, but little comment was made outside the conference, at least, concerning President Harding's suggestion that the seniority issue should be decided by the Labor Board.

Gompers Denounces President's Address

President Gompers had sent for the newspaper men on Saturday and denounced the President's address item by item. He said that to make the decisions of the Labor Board enforceable would amount to making slaves of the employees, and he referred to the public members of the Labor Board as representatives of the employer type of mind. When reminded that two of the three public members had voted with the labor members for the wage increase of 1920, he said it was the fashion to raise wages then but that the board had reduced wages twice since then. He referred to the 23 cent an hour rate for trackmen in some parts of the southwest as a "basic" rate, and when reminded that this applied to less than 7,000 men, he said that it showed the strikers what they might expect next. He declared that the President's address should have been deferred, because the railroad executives in New York meeting with the brotherhood committee assumed a very different attitude after they had learned its nature.

Executives Majority Vote Does Not Bind All Roads

On Monday and Tuesday of this week, prior to the meeting at the Yale Club on Wednesday, there was a more or less general impression that there would again be a sharp division of opinion among the executives. A number of the roads, particularly in the east, which have been more fortunate in meeting the shopmen's strike situation, were understood to be prepared to oppose any concessions of any kind to the strikers. What was considered as practically official announcement to this effect was contained in reports of the meeting of the Eastern Presidents' Conference in New York on Monday. The expected division of opinion, however, failed to materialize. As has been noted above, the resolution expressing the position of the executives was adopted with a dissenting vote by only one executive.

One notes more and more of a tendency to emphasize that a majority vote of the member roads of the Association of Railway Executives is not necessarily binding upon all the roads. As one authority has expressed it, it must be borne in mind that a majority vote of the executives is, insofar as concerns the particular railroad, entirely secondary to the wishes of the road's board of directors or its stockholders. This point is gradually given more significance as the difficulty is realized of trying to settle the strike in the same manner for roads which have practically won the strike as for those which have had considerably less success in this direction. This thought may also be expressed in other words by saying that there is a growing feeling on the part of many observers that a national settlement with the striking shopmen would be a mistake. It is not difficult to read an increasing adherence to this opinion in the action which was taken at the Wednesday meeting.

It would probably be putting the matter somewhat too strong to say that the question of seniority has lately been somewhat subordinate to the question of whether there should be a national settlement or not. There are many observers, however, who feel free to express such an opinion. They add that the strike has been lost as far as the men are concerned and that the issue now from the strikers' point of view is to get back to work on the best terms they can. The issue is made possible, these observers say, because of the knowledge that the railroads will need all their equipment to handle a record-breaking fall movement of grain and other commodities combined with the delayed movement of coal. It is similarly pointed out that the strikers have been somewhat encouraged or, at any rate, held back from going to work, by the continued negotiations on the part of President Harding, the brotherhood leaders, etc.

Bombing Features Western Strike Developments

The bombing of railroad property and the attempted destruction of trains and other transportation facilities featured the past week's developments in the strike situation in western territory.

Many of these instances have involved freight and passenger trains, roundhouses and other property on which members of the train service brotherhoods are employed, clearly pointing to the conclusion that they represent efforts of individuals to create conditions which will induce the train service men to follow the instructions of some of their national leaders to the effect that where their work involves extra hazards brought about by conditions resulting from the strike of shopmen they may exercise their own judgment and refuse to continue in service until these conditions have been remedied.

The most successful attempt of this kind occurred at Gary, Ind., where two train service employees were killed in a wreck, described elsewhere in this issue. Attempted wrecks were also reported at Kings Bridge, Tenn., on August 15, and at Neshota, Ala., on August 16.

The press reports during the past week have been replete with instances of the attempted destruction of railroad property through the use of bombs, dynamite or torches, instances of this character being reported at St. Louis, Mo., and Evansville, Ind., on August 15; at Birmingham, Ala., on August 16; El Reno, Okla., on August 17, and Dallas, Tex., and Grace, Ala., on August 18. In addition strikers or strike sympathizers at San Bernardino, Cal., have displayed a particular fondness for bombing the railroad property at that point, the reports of instances of this character being frequent and more or less regular.

Accompanying this wave of violence, directed both at the railroads, at the intimidation of loyal and new shopmen and at the coercion of the members of the train service brotherhoods, there has been the usual quota of slugging, rioting and similar outbreaks, although the property and personal damage has been less than in previous weeks. Since August 15 trouble of this character has been reported at San Bernardino, Cal., Cedar Rapids, Ia., Superior and Janesville, Wis., Birmingham, Mobile and Albany, Ala., Kansas City, Mo., Cincinnati, Ohio, Topeka, Kan., Colton, Cal., Pueblo, Colo., Van Buren and Little Rock, Ark., Joliet, Ill., Tacoma, Wash., Milwaukee, Wis., Gary, Ind., and Channing, Mich.

The difficulties created in the far west by the sporadic walkouts of train service employees on several of the larger trans-continental roads were rapidly overcome during the

past week, train operation through all of the districts affected by the strike being normal by the night of August 17.

Effect of Sporadic Strikes of Train Service Employees Overcome

On August 16 embargoes were lifted and trains were moved again over the Atchison, Topeka & Santa Fe, the Southern Pacific and the Union Pacific, the roads chiefly affected by the walkouts of the "big four" transportation brotherhoods.

Refusal of brotherhood leaders to sanction the walkouts when the Santa Fe issued ultimatums demanding immediate explanations of the attitude of national officials of the train service unions were followed by speedy developments in untying the traffic knots in California and other western states.

Furthermore at practically all points where similar strikes have been called or threatened, negotiations have been started to settle the difficulties. Nevertheless reports continue to come in of sporadic walkouts or threatened walkouts at other points, but so far no serious inconvenience has been caused by these outbreaks.

On August 20, Warren S. Stone, president of the Brotherhood of Locomotive Engineers, and D. B. Robertson, president of the Brotherhood of Locomotive Firemen and Enginemen, declared that there was no danger of the train service brotherhoods being drawn into a sympathetic strike, even if the negotiations to end the shopcrafts' walkout resulted in failure.

"There never has been any sympathetic strike nor has any been considered," Mr. Stone said. "There are safety laws to take care of the defective equipment which would endanger the lives of the brotherhood members, and it will only be necessary to enforce these laws."

Eastern Railroads Have 71.5 Per Cent Normal Forces

The railroads in the east on August 18 had 71.5 per cent of their normal shop forces. This information was contained in a statement issued by L. F. Loree, president of the Delaware & Hudson, following a meeting on Monday of the Eastern Presidents' Conference of which Mr. Loree is chairman. The statement said:

"The normal number of railway shopmen employed by the railroads in the Eastern region is 161,339. The percentage of this number at work during the past four weeks, together with the weekly increase, was as follows:

	Number	Per Cent	Weekly Increase
July 28	97,724	62.0	....
August 4	103,528	64.7	5,804
August 11	111,324	69.0	7,796
August 18	115,745	71.5	4,421

"It was expected that the ratio of increase of August 11 would be continued on the 18th, but the occurrences of last week put a damper on recruiting. Nothing can be more destructive than to introduce a feeling of uncertainty into a situation such as this."

Pennsylvania Forces Reach 50,000

For the first time since the shopmen's strike began, the shop forces of the Pennsylvania System have risen above the 50,000 mark. Reports on August 22 from all four regions and the Altoona works show 50,022 men reporting for duty and actually working. This represents 91 per cent of a full normal week-day force. In the last week the Pennsylvania System, the announcement giving this information continues, has made a net gain of 1,733 men in its shop forces. As compared with conditions at the low point of the strike which was reached on July 5, there are now 11,737 more men on duty and actually at work.

In order to avoid any possibility of a misunderstanding between the officers of the Pennsylvania System and employees in its engine and train service, in connection with conditions which may arise through the continuance of the miners' and shopmen's strike, a conference between the representatives of the employees and the management was held in Broad Street Station, Philadelphia, on August 19. At this conference an agreement was entered into whereby any question affecting the working conditions of employees in the engine and train service must be taken up through the proper channel, with the strict injunction that "no departure from the terms of the agreement between the management and the men will be tolerated." It was also agreed that no individual employee in engine and train service shall, at any time, take it into their own hands, to deviate from the course outlined in detail in the agreement.

Copies of the agreement are now being distributed to all employees in the engine and train service on the Pennsylvania System, as well as to all officers who deal directly or indirectly with these employees. The agreement or "Memorandum of Understanding" follows in part:

"Memorandum of Understanding"

If engineers or firemen find the engine to which they are assigned is in what they believe to be a defective condition they should at once report such condition to the proper officer. If they are in the enginehouse at the time the defect is discovered they should at once call the enginehouse foreman's attention to same. If train crews find equipment in a defective condition they should at once notify the proper officers.

When employes report motive power or equipment in a defective condition the proper supervising officer will, as promptly as possible, have an investigation made of the defect. If the defect is such as to render the locomotive or car unsafe to work on, employes will not be required to perform service thereon.

If an employe reports a locomotive or car in such a defective condition that he believes it unsafe to perform service thereon, and the proper officer to whom the defect has been reported decides after investigation that the defect is such as will not render its use on the part of the employe unsafe, and so reports to the employe with instructions to the employe that he shall use the defective equipment, the employe will then perform his usual service with such equipment. The employe so using equipment which he considers is in an unsafe condition may report the matter to his local representative who should as promptly as possible take the matter up with the superintendent. The superintendent will discuss such a question with the local representative with as little delay as possible.

Where employes find motive power or equipment in a defective condition which renders its use unusually dangerous or burdensome on the employe, they should report such a condition to their local representative who should at once take the matter up with the superintendent under the "Memorandum of Understanding." The superintendent will handle such matters promptly without requiring the usual five days' previous notice.

If an employe is called for mine service and he believes conditions resulting from the strike of the miners will render the performance of such service dangerous to his personal safety, he should at once report such situation to the proper officer, who will at once investigate the complaint. Where investigation shows that the performance of such service may endanger the safety of the employe, the supervising officer will either not require such service of the employes or if the service is required of the employes, adequate protection will be furnished them.

Where it is necessary to perform mine service in known dangerous territory, performance of such service will only be required of employes during daylight hours. If an employe has reported that he believes the performance of such mine run service would endanger his personal safety and the proper officer after investigation has insisted upon the employe performing such service, such employe, if he desires further consideration of his complaint should present the matter to his local representative who should at once take the question up with the superintendent under the "Memorandum of Understanding." Questions so referred to the superintendent will be discussed by him as promptly as possible without the usual five day's previous notice.

If it becomes necessary to handle any of these complaints beyond the superintendent, the general officer to whom the complaint is referred by the general chairman handling same will, as promptly

as possible, meet and discuss the same without requiring the usual five days' previous notice.

Officers will not require train and engine service employes to do anything outside of their regular duties. . . .

New Shop Crafts Organizations

Various railroads have begun to report the formation on their lines of new shop crafts organizations in accordance with the Labor Board's resolution of July 3. The New Haven's new organization has received the name of Association of Mechanical Department Employees—New Haven system.

The Southern Pacific's organization is the Pacific System Shop Crafts Protective League.

President Pearson of the New Haven in his announcement of the new organization, includes the significant statement that the agreement between the road and the new union covers "the handling without outside dictation of all matters of mutual interest." The announcement further says that

"The rates of pay agreed upon are both higher and lower than the former flat scale of the Labor Board, providing more liberally for work requiring the greater skill or effort."

The road in its advertisements for new men gives the new rates of pay as follows: Machinists, 66 to 76 cents an hour; boiler makers, 67 to 75 cents an hour; blacksmiths, 66 to 75 cents an hour; electrical workers, 65 to 75 cents an hour; car inspectors and repairmen, 63 cents an hour; helpers, first year, 45 cents an hour.

Further details concerning the New Haven's new shopmen's organization were given out in a statement issued by the New Haven on Wednesday. The statement said that the preamble of the by-laws of the new organization reads:

"We believe that with unity, guided by intelligence, and with an intelligent association we can acquire discipline necessary to enable us to act together, concentrate our strength, and direct our efforts toward a common purpose."

The object of the association is declared to be "to promote the welfare and protect the interests of its members; to promote good feeling and constructive co-operation between its members and the officers of the company, and, by joint action, protect and promote the interests of the public."

All mechanics, helpers, and apprentices who are actively engaged in the maintenance of equipment and machinery in the motive power department of the New Haven and who are not acting in a supervisory capacity, are entitled to membership in the association. Furthermore, employees who are entitled to participate in this association and who are American citizens, 21 years old or over, shall be eligible to office in the association. One of the rules of the new association declares:

"Elections shall be by secret ballot, and so conducted as to avoid undue influence or interference with voters in any manner whatsoever, and to prevent any fraud in the counting of ballots."

The officers of the association are to serve until the next annual meeting in July, or until their successors have been elected and qualified.

There is a general board whose jurisdiction includes the New York, New Haven, Hartford, Providence, and Boston divisions, the Midland, Old Colony, Waterbury, Danbury and Central New England divisions, the Van Nest shops, and "three members from the locomotive, five members from the passenger car, and two from the freight car department at Readville." The general board is to look after the interests of the association on their respective divisions, reporting to the association as a body matters of interest in their respective jurisdictions. There is a system adjustment board which is to place before the officers of the company all matters submitted to it by a local adjustment board or the general board and report to the general board the results. This system adjustment board has authority to deal with system officers upon all unsettled disputes or grievances originating from the divisions or in the shops, and upon all matters relating to interpretations of rules, rates of pay, working conditions, and of general interest to the membership. Any agreement, it is declared, reached between the system adjustment board and officers of the company with respect to these matters, shall, upon approval by the general board, be binding upon the membership as a whole; furthermore, any disputes which cannot be settled in conference between the system adjustment board and officers of the company will be handled in accordance with the provisions of the Transportation Act.

Massachusetts Governor Offers Reward

The Governor of Massachusetts on Friday, August 18, announced that the State would pay a reward of $1,000 for the detection and conviction of persons guilty of violence towards railroad employees or of destruction of railroad property. The Governor acted on a report of the Commissioner of Public Safety who enumerated 27 or more instances of attacks on railroad employees, cutting of air hose, stone throwing and intimidation of employees' families. These acts were committed at West Springfield, Worcester, Westboro, Framingham, Lowell, Clinton, Greenfield and other places. There were seven or more instances of cutting of air hose, 18 cars in one train being thus disabled on one occasion.

In behalf of the Boston & Albany, the Superior Court, at Boston, on August 18 issued a temporary order, warning against picketing and committing acts of violence. A similar injunction was secured by the New York, New Haven & Hartford in the United States District Court at Norwalk, Conn., on August 17.

Dispatches of August 17 reported cutting of hose and other acts of vandalism at Portsmouth, N. H., and other points on the Boston & Maine.

Southern Calls for Volunteers

Fairfax Harrison, president of the Southern Railway, has issued a statement calling on the people of the South, who want justice done and to that end demand that the strike be fought out, to volunteer their active aid.

"Normal transportation will be restored when public opinion asserts itself," he said. "If that public opinion supports the determination of the striking shopmen to disregard the judgments of the tribunal set up by Congress to do them justice and agrees that they may write their own pay checks, then there may be a resumption of work on that basis, but freight rates must be again increased.

"On the other hand, the responses received to my public statement on Monday last show that the people all over the South, who pay the freight, want justice done—no more, no less—and to that end now demand that this strike be fought out.

"It remains for those who feel that way about it to volunteer their active aid in the shops and roundhouses during the crisis. The Southern will afford an opportunity to all citizens to assert themselves, and under protection, to give practical effect to their opinions in the present situation."

Mr. Harrison later announced that a large number of skilled mechanics have been imported and that others were applying for work in a steady stream. "It is apparent," he said, "that there are many men in the North and East who want to work for us and who give every evidence of large experience in railroad shops."

The governor of North Carolina sent 500 national guards on Saturday to camp in the neighborhood of its Spencer shops, where there had been threats of disorder upon the arrival of new shop workers.

After the state troops had taken over the patrol of the yards a number of the enginemen refused to work and an

agreement was reached which resulted in the withdrawal of the troops.

The company has also obtained injunctions covering the principal points on its system.

Chamber of Commerce Analyzes Effect of Strike

The Chamber of Commerce of the United States is distributing to its members a statement prepared by the Railroad Bureau of the Department of Transportation and Communication of the chamber for the guidance of the members in reaching their own conclusions regarding the railroad strike. The statement first outlines the proposals made by the President and the replies of the railroad and the unions, together with various quotations, then gives a series of statistics reflecting the effects of the strike. From an examination of reports of the American Railway Association it is shown that during the four weeks in June preceding the strike there was loaded a weekly average of 92,636 cars of coal and 843,814 cars of all commodities. For five weeks in July there was an average weekly decrease of 13,940 cars, or 15 per cent, in the number of cars loaded with coal and an average weekly decrease of 8,418 cars, or 1 per cent, in the number of cars loaded with all commodities. Similar comparisons are made of the freight car surplus, the condition of locomotives and cars on July 1 and on July 15, the percentage of cars furnished to cars required. There is also a summary taken from telegraph reports to the I. C. C. of accidents for June, July and August.

An examination of these telegraphic reports for June, July, and August, 1922, shows killed and injured as follows:

	Employees	Passengers	Both
June, 1922 (immediately prior to the strike)	86	127	213
July, 1922 (immediately following the strike)	63	30	93
First 16 days in August, 1922	64	79	143

The monthly average for this class of accidents for six months ended June 30, 1922, shows employees 88, passengers 52, both 140.

The telegraphic reports for June, July, and August, 1921, showed:

	Employees	Passengers	Both
June, 1921	154	112	266
July, 1921	111	14	125
August, 1921	111	19	130

The statement says the available statistics do not permit segregation of figures into casualties in accidents resulting from defective equipment and casualties in accidents due to other causes. For example, it is well known that the figures for the first 16 days of August, 1922, include two disastrous accidents neither of which was related in any way to defective equipment and in which more than 50 per cent of the casualties for the period occurred.

In a Recent Issue of the Pullman News, a new magazine which is being published by the Pullman Company, and distributed among its employees and patrons, a story is told of the initial trips of the first Pullman car. J. L. Barnes, the first conductor, was later a division superintendent of the Atchison, Topeka & Santa Fe, and is now retired. The car, No. 9, was a remodeled Chicago & Alton passenger coach, and the run was from Bloomington, Ill., to Chicago, over the Chicago & Alton, on September 1, 1859. George M. Pullman, its inventor, was the most observant of four passengers. In connection with this story Mr. Barnes is quoted as saying:

"I remember that on that first night I had to compel the passengers to take off their boots before they got into their berths. They wanted to keep them on—seemed afraid to take them off. I wore no uniform and was in citizen's clothes, although I had a badge. The pay was $4 a round trip or $2 a night. The three cash passengers, all men, were from Bloomington. The first month's business was poor. People had been in the habit of sitting up all night in the straight back seats, and they did not think much of going to bed while traveling."

Coal Distribution

Washington, D. C.

In order to meet the pressing need for immediate despatch of large tonnages of coal to the upper Great Lakes region from Southern Appalachian districts, the Federal Fuel Distribution Committee has put into effect a plan whereby all coal produced on Monday, Wednesday and Saturday of this week in a number of districts in Kentucky and West Virginia will be shipped to lake ports for forwarding to the Northwest and other lake territory. It is estimated that this movement should approximate 400,000 tons of coal. The districts from which these fuel supplies are to come are the Logan, Kanawha, Coal River, Big Sandy, Sandy Valley and Elkhorn, and Long Fork districts on the Chesapeake & Ohio, the Thacker-Kenova district on the Norfolk & Western; and the Eastern Kentucky and Cumberland Valley divisions of the Louisville & Nashville, excluding mines on the Cumberland Valley division at Middlesboro, Ky., and east thereof.

The Fuel Distribution Committee has received numerous requests that the movement of coal to the upper lakes be expedited. These inquirers were informed that, while, under the committee's program of movement, coal dumpings at lake ports have not yet reached considerable proportions, the lake movement is believed now to be attaining a real momentum which must be felt very shortly. As the program has had but a few days in which to operate, naturally the advanced tide of the movement has not yet been especially perceptible north of the Ohio river. An important factor in handling lake tonnages is the coal-handling capacity of the ports of Toledo and Sandusky, the natural outlets of the coal-carrying roads engaged in this movement.

The committee was informed that loadings of coal for lake movement from West Virginia and eastern Kentucky districts amounted to 2,558 cars on Monday, the first day of the new program. Indications were that the anticipated tonnage of 400,000 tons of lake coal would be reached during the week.

Reports received by Fuel Distributor Spencer from Pennsylvania indicate that production of coal in that state may be materially increased by the latter part of the week. Conferences of operators in the various Pennsylvania districts were reported as giving consideration to the matter of reopening their mines.

A plan has been devised by the Fuel Distribution Committee for certification by the state fuel administrations of the status of coal of priority No. 2 classification or below, loaded by mines for shipment to public utilities or other concerns with whom contracts for coal already exist. Some complications have arisen due to the reluctance of railroads to move such coal without definite assurance as to its classification. Under the new plan, the state fuel administrator, after the receipt of a proper affidavit from the consumer, will furnish a certificate to the effect that the coal contracted for is to be used for certain approved purposes. This certificate will be delivered by the consumer to the shipper, who must be prepared to exhibit the certificate upon request of the railroad serving his mine.

A number of authorizations for movement of coal in priority class No. 1 just issued by the fuel distributor cover the movement of coal to various railroads in Illinois, Michigan, Iowa and Indiana. The needs of quite a number of public utilities in Indiana, Michigan and Iowa have also been provided for. The problem of keeping the public utilities of the middle west going is one which has to be given very careful attention. The committtee is endeavoring for the present to keep these utilities provided with 10 to 20 days' supply of coal.

The Missouri and Kansas state fuel administrations reported that they were arranging to obtain emergency fuel

supplies as far as possible from producing coal mines in southwestern Missouri and southeastern Kansas.

The matter of the consumption of pea coal as locomotive fuel by certain eastern railroads has been brought to the attention of the fuel committee. It is the general policy of the committee to discourage the use of the smaller sizes of anthracite for steam-raising and industrial purposes at this time, as available supplies of such coal are urgently needed for domestic heating purposes.

Inquiries as to whether the forwarding from Washington to district fuel committees of authorizations for the movement of coal under Class 2 priority establishes precedence over general orders of this classification are being answered by the information that all Class 2 business should have equal attention irrespective of whether the authorization comes from the Federal Fuel Distributor. The forwarding of authorizations from Washington for the movement of coal to a consignee under Class 2 priority is merely a method of designation of the particular mine from which the coal can most practically be shipped under prevailing conditions. It is the general policy of the committee that all orders within a certain classification be given equal consideration.

The Fuel Distribution Committee has received applications for the shipment of tidewater coal under Class 2 priority to the West Indies for bunkering purposes on those islands. These applications are being denied such classification as shipments of this nature are considered by the Interstate Commerce Commission as being cargo coal rather than bunker coal.

Following the recent dispatch of telegrams to railroad officials in the eastern part of the country, calling their attention to complications in the distribution of railway fuel occasioned by competitive bidding which was causing a tendency toward price inflation, the fuel distributor has been assured by railroads that generally he may count on their full co-operation in the matter. The committee is informed that shipments of railway fuel are now proceeding to southwestern lines from Alabama, in which state some complications had arisen.

Authorizations for the movements of approximately one million tons of coal were issued on August 17 by the central fuel committee. Provision was made for large tonnages of railway fuel for railroads of the middle west, and for the fuel supplies of a number of public utilities operating in Indiana, Michigan, Illinois, and Ohio cities.

The more urgent fuel needs of a number of Canadian railroads have been presented to the Federal Fuel Distribution Committee by the Federal Advisory Fuel Committee of Canada, in session at Ottawa. The Canadian committee has asked for 125,000 tons for railway fuel for both lake and rail movement, and has given assurance that the necessary financial guarantees will be arranged. The fuel requirements of these railroads have in the past largely been supplied from Ohio and Pennsylvania, and it is the belief of the Fuel Distribution Committee that new coal production in Ohio will tend to relieve the Canadian situation materially. Some Canadian railroads own their own mines in Ohio.

The state fuel administrations of Missouri and Kansas, in a joint communication to the Federal Fuel Distributor, have called attention to the raising of prices of coal in those states, due, it is claimed, to competitive bidding for coal on the part of railroads. To meet the situation, it was requested that the provisions of Service Order No. 23 of the Interstate Commerce Commission be extended to trans-Mississippi territory. It is hoped by the central fuel committee that this situation may be corrected through the co-operation of railroads operating in these states.

The fuel situation of a number of middle western railways centering in Chicago was said to be rather acute. From Chicago came also urgent requests for coal for the use of various hospitals, schools and other public institutions. The shipment of blacksmithing coal is a matter of considerable concern in the trans-Mississippi region. An effort is being made by the committee to obtain Pennsylvania coal to meet the urgent demands of public utilities in Buffalo, N. Y.

District fuel committees were informed on Monday by the Federal Fuel Distribution Committee that the recommended fair price for coal produced in the states of Tennessee and Virginia has been raised to $4.50 per net ton f. o. b. mines. The adjustment of the price for Tennessee coal was made upon the recommendation of Governor Taylor of that state. Inasmuch as the $4.50 price had been granted in West Virginia, Kentucky and Tennessee at the request of the governors of these three states, it was thought only just that the increased price be allowed also in Virginia. The action taken sets up a uniform maximum fair price of $4.50 per ton in the four states. The previous price prevailing in the larger part of the territory was $3.50, the raise in price generally averaging a dollar per ton.

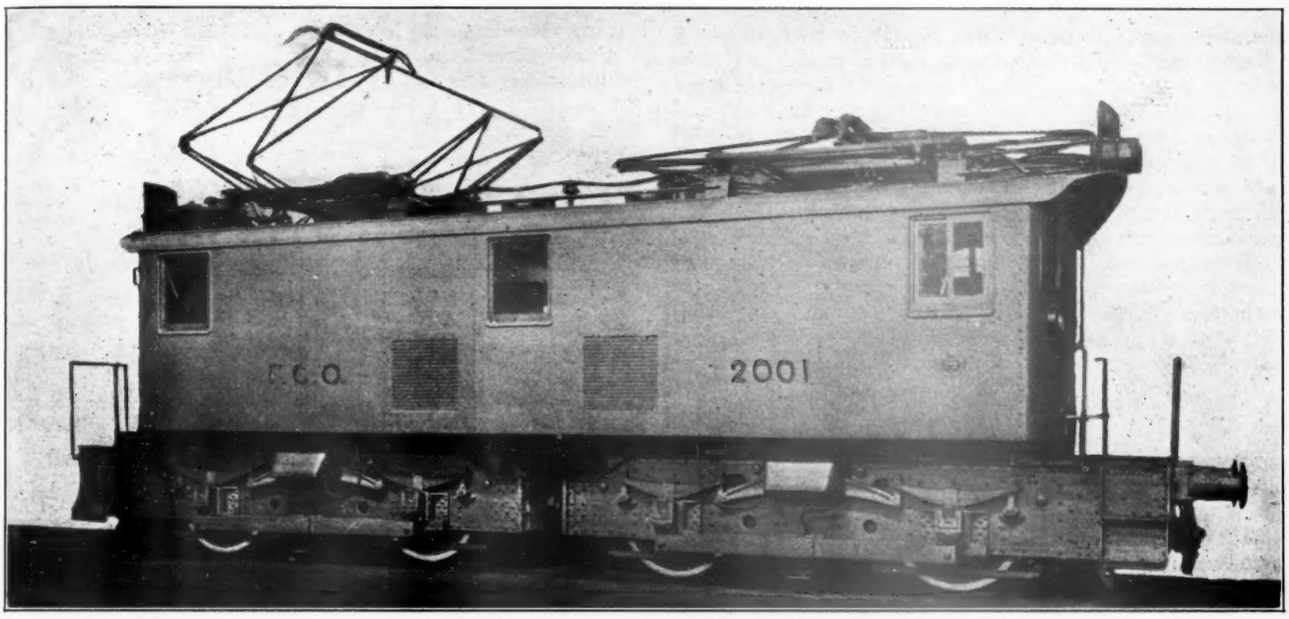
The outlook for coal production the present week is for nearly 6,000,000 tons, based on an estimated production of 1,500,000 tons from fields just being reopened.

A total movement of 600,000 tons of coal to the Great Lake region is the program of the Federal Distribution Committee for the week beginning Monday, August 28. While the details have not yet been fully arranged, it is probable that a considerable proportion of this tonnage will come from mines recently reopened in Ohio, Pennsylvania, Michigan and northern West Virginia. The fuel distributor considers that, regardless of strike settlements in the various bituminous fields, the supplying of the necessary tonnage to the lake country before the close of navigation is a serious problem. By utilizing for this movement new production from the states named, the committee hopes to relieve considerably the strain on the producers and railroads of the Southern Appalachian field. It is estimated that about 85,000 tons of coal available for lake movement is now being mined in Pennsylvania and 50,000 tons per day in the northern West Virginia field. Coal was being produced in Ohio Saturday, August 19, at the rate of 250,000 tons per week. It is expected that production in that state for this week will amount to approximately 350,000 tons.

The Geological Survey estimates that, if production is re-established in Indiana immediately, as seems probable, a maximum production of 6,300,000 tons may be expected this week. The outlook for next week is for a production of from 7,500,000 to 8,000,000 tons. These figures may, however, be considerably increased if strike settlements are made in still other fields.

On Monday, August 21, 19,043 cars were loaded with coal. This was the largest number loaded on any one day since the miners' strike began on April 1 last. Monday loadings would be at the annual rate of production of approximately 6,250,000 tons per week. This was an increase of 3,321 cars over the previous Monday. During the week ended on August 21, 85,161 cars were loaded with coal, an increase of 4,630 cars over the preceding week. The increase was due principally to new production resulting from the agreement recently reached by the miners and the operators at Cleveland.

The urgency of the railway fuel situation promises to be considerably relieved by production from coal fields now being reopened. The presence of this new coal in the market, rendering available those supplies of fuel which the railroads have normally been accustomed to obtain, naturally tends to relieve the strain on the railway fuel situation in the Southern Appalachian districts, which have for some months been the chief sources of provision of railway fuel.



Seventy-three Ton Freight Locomotive for Yard and Main Line Service, Buenos Aires & Western

Steam Road Electrifications in the Argentine

South American Republic Finds Electric Operation Profitable and Will Extend Lines to Meet Traffic Needs

By Lynn G. Riley
Control Engineer, Westinghouse Electric & Mfg. Co.

THE RECENT inauguration of freight service on the electrified section of the Buenos Aires & Western Railroad (Ferro Carril Oeste) calls attention to a field for electrification of steam roads which has great possibilities. One of the most important factors in the phenomenal development of the Argentine Republic is the extensive system of railways and their excellent condition. Many roads radiate from the capital to the inland cities and across the far-reaching pampas, and a net-work of inter-connecting lines brings good transportation facilities to the agricultural and cattle raising provinces, extending back to the Andean foothills.

Buenos Aires being the "Capital Federal" and the center of import and export activity, the city is rapidly out-growing its transportation systems and at some points the congestion in both passenger and freight traffic is reaching the limit of existing facilities.

There are present all of the conditions tending to make electrification desirable and profitable: scarcity of fuel, congestion in terminals, high cost of additional trackage, and the very probable rapid growth in traffic in the near future. While the two electrifications in this district, the Argentine Central and the Buenos Aires & Western, were both undertaken prior to those of the Paulista Railways in Brazil, and the Chilean Railways on the west coast, neither so far has been extended beyond the suburban districts.

Broad Gage Roads in Buenos Aires

There are four important broad gage railroads entering the city, which handle the greater portion of the traffic. There are also several smaller roads of varying gages and prominence.

1.—The Buenos Aires & Pacific Railroad has its station near the river front and is in direct contact with the extensive system of docks. The lines extend westward as far as Mendoza, where they connect with the Transandean railway and furnish through service to the Chilean coast.

2.—The Argentine Central Railroad has a large terminal, also near the river front, with six local tracks electrified. These lines extend west and northwest along the Rio de la Plata and to the cities of Cordoba and Tucaman.

3.—The Buenos Aires & Western terminal is located in the center of the city. The local tracks are electrified for 20 miles. These lines form an extensive net-work westward and south, extending as far as the southern borders of the province of Mendoza.

4.—The Great Southern Railroad has terminal facilities toward the east of the center of the city and in the city of La Plata where there are also extensive docks. This will probably be the next electrification in Buenos Aires. The Southern Railway system covers a large area of prosperous territory as far south as Bahia Blanca, from which place a second transcontinental line is projected.

Rolling stock, equipment and operation of all of these roads are of a high class, including every facility for comfortable express passenger service.

Electrification of Argentine Central

Suburban passenger service on the Argentine Central is of great importance inasmuch as the lines connect from the main passenger terminal, Retiro, to several residential suburbs and pass through an elaborate system of parks where large crowds congregate. In 1916 the electrification was completed from Retiro to Tigra, a distance of 16 miles,

with six tracks electrified in the terminal, four tracks through some of the parks and two tracks for the complete distance.

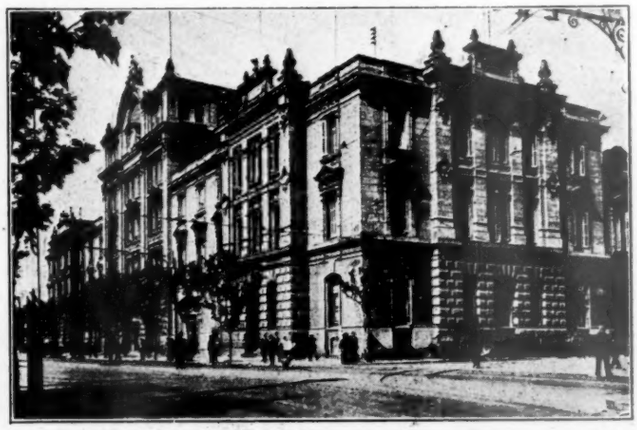
Normal service is handled with six-car trains and there are 90 trains per day in each direction. There are 67 motor cars and 50 trailers in service, weighing 52 tons each, and having an over-all length of 62 ft. The system is third rail at 800 volts d.c., and trains are made up of one-half motor cars and one-half trailers, motor cars being equipped with two 250 h.p. motors and automatic control. The entire electrification, the roadbed and shops have a very substantial appearance and the system is not yet being worked to its full capacity. It is probable that another branch which parellels the present electrified division, but touches several other important suburbs, will be electrified as soon as conditions warrant.

Electrification of Buenos Aires & Western

The electrification of the Buenos Aires & Western Railroad followed closely that of the Argentine Central and is quite similar in the adoption of 800 volts d.c. third rail. The terminal is at Plaza Once where the multiple-unit trains transfer passengers direct to the subway system of the Anglo-Argentine Tramways. These trains are also made of approximately one-half motor cars and one-half trailers and the cars are equipped with four 200 h.p. motors. There are a total of 47 motor cars and 45 trailers under construction. These cars weigh approximately 50 tons and are 58 feet over-all, with two side doors, and all station platforms will eventually be on a level with the car floor.

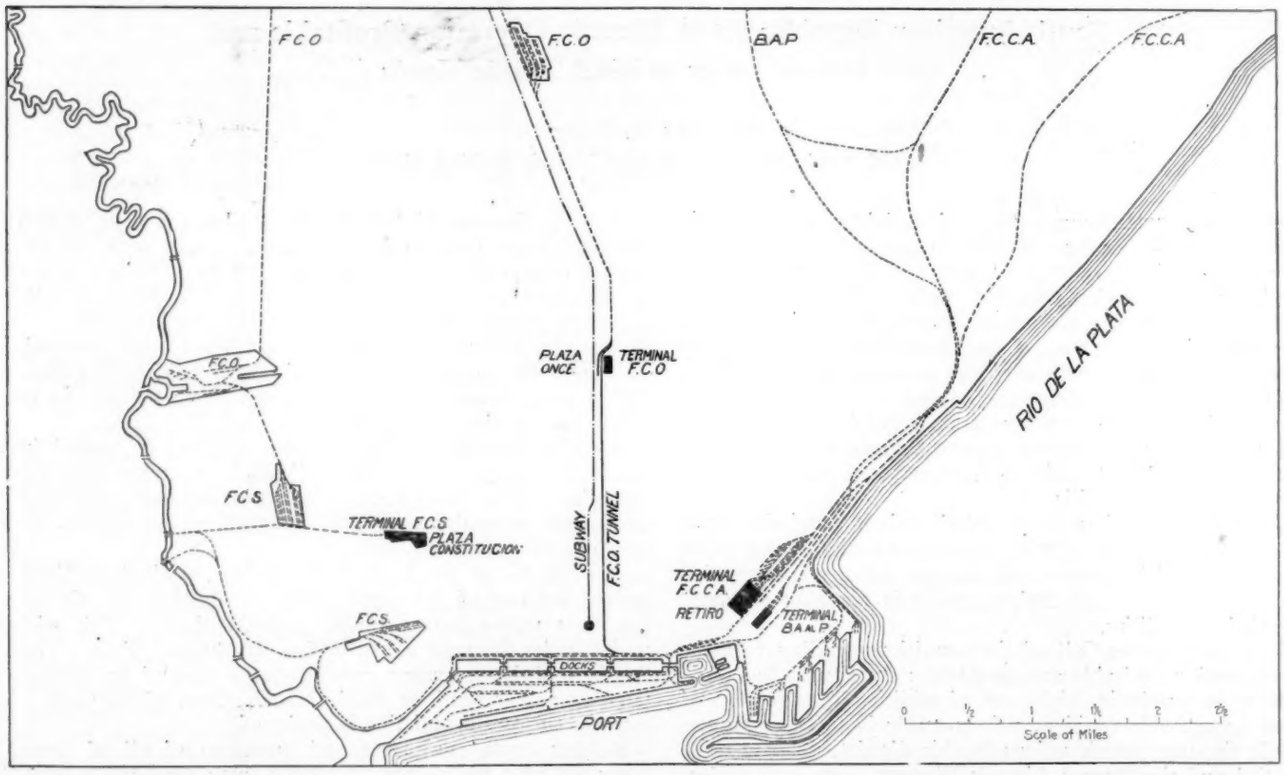
The electrified zone extends for a distance of 20 miles from Estacion Once to Moreno. In addition there is a single-track freight tunnel from the passenger terminal, connecting directly to the port and the system of dock tracks laid out in connection with the warehouses. This tunnel, as well as the dock track, is fitted with overhead wire instead of third rail, and the freight trains are handled by two Baldwin-Westinghouse locomotives.

A new power house of 18,600 kilowatts capacity, 25-cycle, in turbo-generators is located at the port. Transmission is at 20,000 volts from the main plant to the motor-generator set sub-stations.



Terminal Building of the Buenos Aires & Western at Plaza Once. Electric Suburban Trains Connect Direct With the Subways of the Argentine Tramways at This Point

A large amount of freight is moved to and from the docks through the 2.5 miles of single track tunnel under the center of the city to the terminal at Plaza Once, and from there over the main line for a distance of 11 miles to the freight yards at Haedo. The maximum load is 600 tons and it is necessary at times to start this train on 1.4 per cent grades. On level tracks a single locomotive makes 28 m.p.h. with

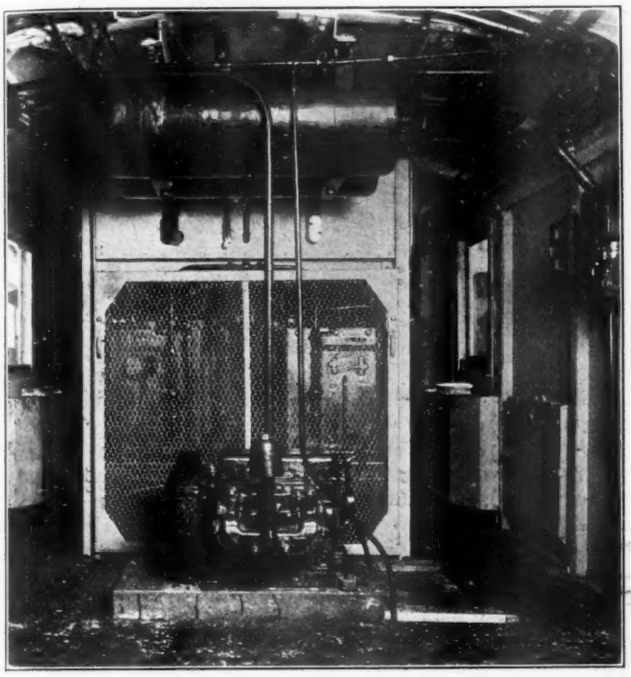


Map of Buenos Aires Showing the Principal Broad Gage Railroads and Their Terminals. Buenos Aires & Pacific Railroad (Ferro Carril Buenos Aires al Pacifico); Argentine Central Railroad (Ferro Carril Central Argentino); Buenos Aires & Western Railroad (Ferro Carril Oeste); Great Southern Railroad (Ferro Carril Sud)

such a train, and 45 m.p h. is considered the maximum speed to be attained on down grades.

Service Conditions

Two Baldwin-Westinghouse locomotives of 73 tons each are operating in this service. As shown in the illustrations,



Interior of Locomotive, Buenos Aires & Western, Showing Control Apparatus Compartment and Air Compressor

they are of the articulated truck, box cab type, with 9 ft. rigid wheelbase, and a total wheelbase of 27 ft. 6 in. The wheel arrangement is 0-4-0 with all weight on the driving axles. The over-all length is 43 ft. 2 in., the couplers are of the continental type.

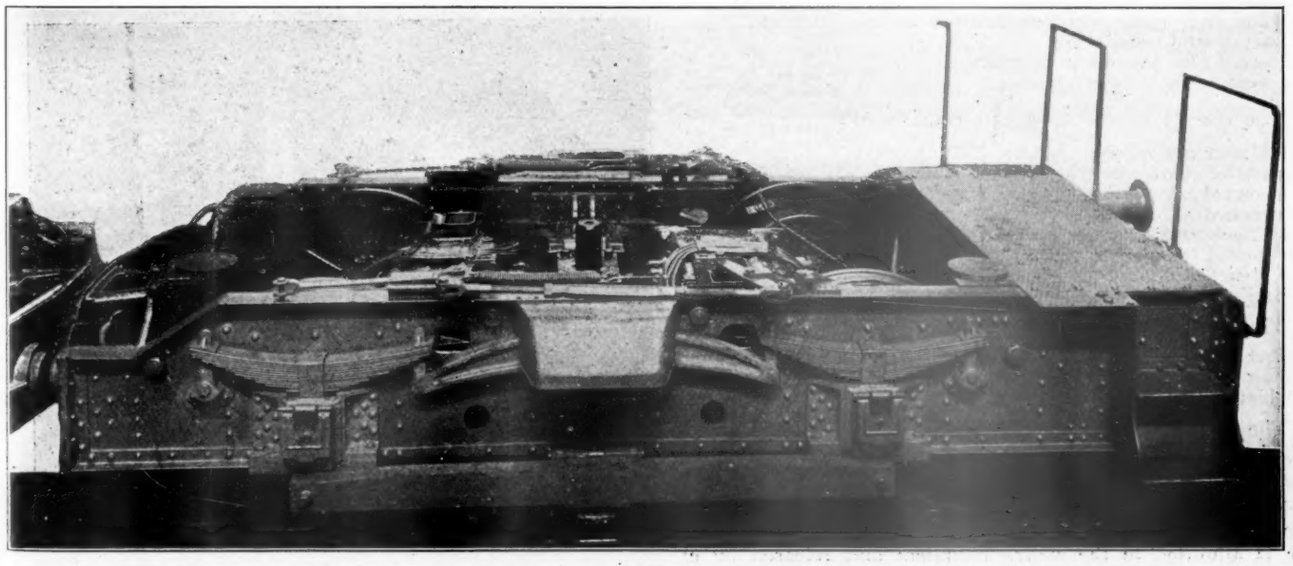
The truck side frames are of structural steel and the bolster and bumpers of cast steel. For operation on the main line each truck is equipped with third-rail shoes and fuses. Two pantagraph trolleys are provided for use in the tunnel and around the docks, for operating from the overhead wire.

Four Westinghouse motors of 230 h.p. each at 800 volts are geared at an 18:70 ratio to 48 in. wheels. The maximum tractive effort available for starting is about 36,000 lb. With forced ventilation the one-hour rating permits a tractive effort of 19,000 lb. at 18 m.p.h. and a continuous rating of 9,600 lb. at 23 m.p.h.

The next step in the extension of electric service will

Interior of Operating Cab, Buenos Aires & Western Locomotive, Showing Master Controller, Brake Valve and Instrument Panel

probably be the handling of through passenger trains with electric locomotives from the terminal to the end of the third-rail section. These trains are of 500 tons instead of 600



Detail View of Locomotive Truck, Showing Motors, Spring Equalizing System and Third-Rail Shoes

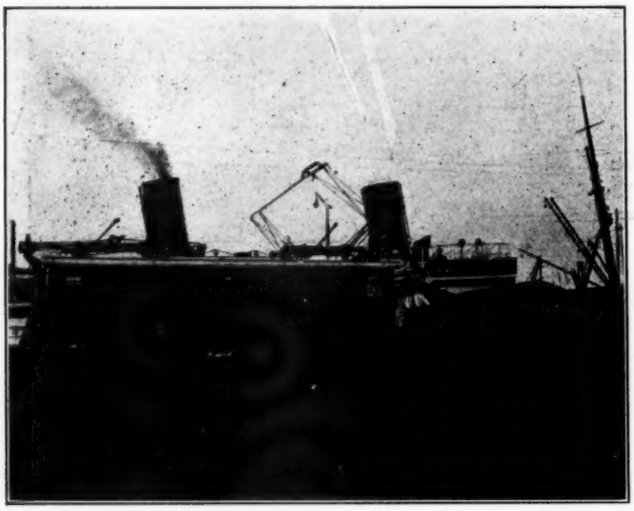
tons, but must operate at somewhat higher speed than the freight trains. The multiple-unit trains over this section have a balancing speed of 50 m.p.h.

When plans were first made for this electrification there was provision in all electrical equipment for a possible change to 1,600-volt operation. There seems to be no immediate prospect of such a change being made. A third rail in the form of an inverted L combines the advantages of under running contact shoes, with the mounting on the top of insulators, without the need for an overhung bracket. All rails are well covered with a substantial wood box-construction.

Locomotive Equipment

The main circuit apparatus for the locomotive consists of the following items:

4 230 hp. motors with forced ventilation.
2 air-operated pantagraph trolleys.
4 third-rail shoes with individual fuses.
2 main circuit disconnecting knife switches for separating the pantagraph trolleys and the third-rail circuit.
1 main fuse box mounted on the roof.



A Buenos Aires & Western Freight Locomotive in Service at the Docks of Buenos Aires. A Tunnel 2.5 Miles Long Connects from This Point to the Main Terminal

2 nine-switch electric pneumatic switch groups containing the unit switches for speed combinations and acceleration.
1 set of grid resistance.
2 drum type pneumatic reversers.
2 main motor cut-out switches.

The control circuit apparatus consists of:

2 Master controllers.
2 sets of control switches and push buttons.
1 control resistor for reducing line voltage for the low voltage control.
4 12-point train line receptacles with jumpers for tandem operation of locomotives.
Miscellaneous junction boxes, lighting switches and other details.

The auxiliary apparatus consists of:

1 set airbrake apparatus, complete, with clasp brakes.
1 air compressor for brakes and control.
1 blower motor for forced ventilation of the main motors.

The control is type HL Westinghouse electro-pneumatic which is the Westinghouse standard for locomotive application. All changes in circuits for applying power to and accelerating the motors are made by unit switches which are closed by air pressure and opened by a spring. The air is admitted to the switch cylinders and released by a magnet valve, controlled electrically by the master controller in the operating cab. Current for the controlling circuits is drawn from the line through a resistance which reduces the voltage to less than 100 volts for the operation of the magnet coils.

The drum type reversers, one for each pair of motors, are also electro-pneumatically controlled.

For freight service and frequent starting a large number of control notches are desirable; therefore, this control is arranged with a total of ten notches with the four motors in series parallel connection and nine notches with the motors in parallel connection. The bridge type of transition is employed in changing from the series parallel to the parallel connections. By this means full tractive effort is maintained with all motors during the transition period and there is neither slackening of speed nor surging in the train while passing over this position. Full overload protection is secured by the use of overload trip relays in the circuit for each pair of motors. A large factor of safety is provided in the capacity of the main grid resistors to take care of unusual starting conditions.

A cable reel is mounted inside the cab and carries sufficient cable with contact devices at each end to connect from the third-rail to the blade of the main knife switch for emergency operation on gaps in the third rail.

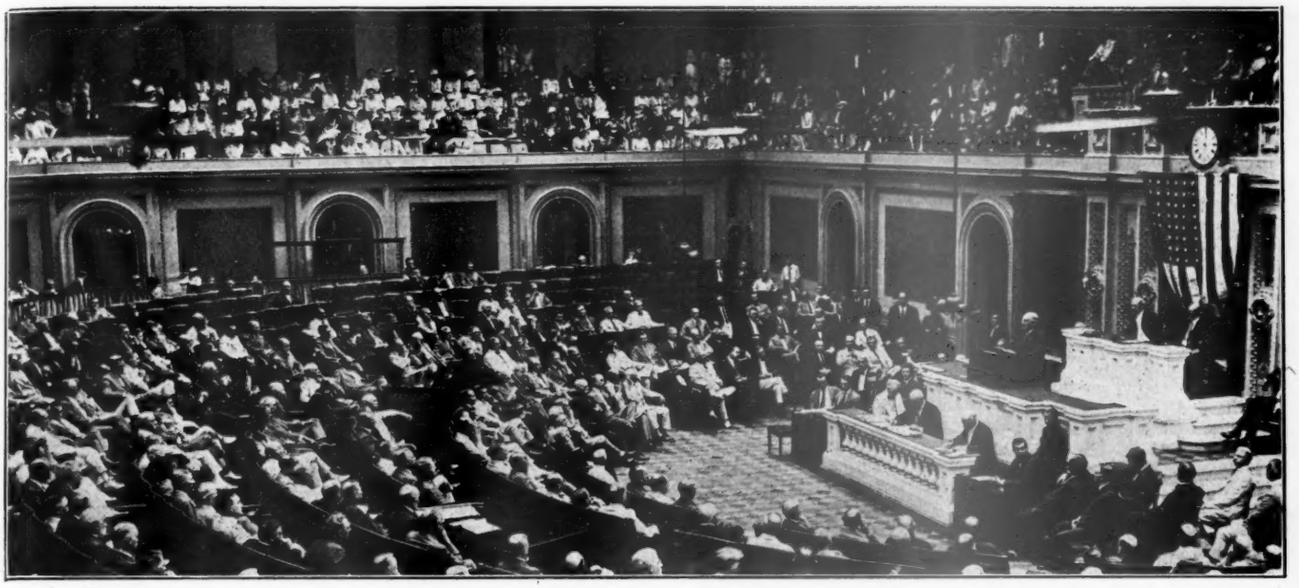
All features of the electrical equipment conform to the most modern practice in locomotive design and establish a permanent basis for extensions of the electrification. The two electrifications now in operation in Buenos Aires are looked upon as having been very well planned and executed, and frequent extensions may be expected as a part of the normal growth of the country.

THE INTERSTATE COMMERCE COMMISSION has issued a modification of its order defining the limits of United States Standard, Eastern and Central time zones so as to include the territory embraced within the corporate limits of the city of Detroit, Mich., in the first zone. This was done on petition of the city of Detroit.

FLIES AND RODENTS, constant enemies, demand a share of the attention of the purchasing agent of the Southern Pacific. During 1921, the company purchased 163 rat traps, 255 mouse traps, 30 fly traps and 16 gopher traps. The rat and mouse traps were used in storehouses, warehouses, commissaries, etc., and the fly traps in restaurants and commissary supply houses.

"P. & A. Photo"

Effects of Bomb Explosion Near Weehawken, N. J., August 13



President Harding Addresses Congress. "P & A Photo"

The President Says the Law Must Prevail

To Use All Power of Government to Maintain Transportation and Sustain Right of Men to Work

WASHINGTON, D. C.

IN AN ADDRESS before a joint session of the Senate and the House of Representatives on Friday, August 18, President Harding gave to Congress and the country an account of his efforts to settle the coal and railroad strikes and the motives which had inspired his endeavors, announcing in vigorous but somewhat general language that he was "resolved to use all the power of the government to maintain transportation, and sustain the right of men to work." The address had been postponed one day in order not to embarrass the conference between the brotherhood leaders and a committee of railroad executives in New York but when it appeared that the first day of the conference had brought forth no results he determined to delay no longer in carrying out his announced intention of laying the entire situation before the public as he saw it after several weeks of conference and correspondence in the endeavor to bring about a voluntary adjustment. The speech had been sent to the printer on Thursday and some last revisions were made in it only an hour or two before the President went to the Capitol.

Contrary to the many predictions which had been published, the President did nothing which could be construed as "passing the buck to Congress" and as far as the railroad situation is concerned he made no proposals for legislation, saying it was not his thought to ask Congress to deal with the problem at this time and that no hasty action would contribute to the solution of the critical situation. While he declared that the decisions of the Labor Board must be made enforceable and effective against carriers and employees alike, and while it is understood that members of the Senate committee on interstate commerce who have been in consultation with the President recently have made plans for amending the Transportation Act for the future along that line at the next session of Congress, the President pointed out that the law is new and said that no perfection of it now "could be helpful in the present threatened paralysis of transportation."

That part of the President's address relating to the railroad strike is as follows:

Text of President's Address Relating to Railroad Strike

"The public menace in the coal situation was made more acute and more serious at the beginning of July by the strike of the Federated Shop Crafts in the railroad service—a strike against a wage decision made by the Railroad Labor Board, directly affecting approximately 400,000 men. The justice of the decision is not for discussion here. The decision has been lost sight of in subsequent developments. In any event, it was always possible to appeal for rehearing and the submission of new evidence, and it is always a safe assumption that a Government agency of adjustment deciding unjustly will be quick to make right any wrong.

"The Railroad Labor Board was created by Congress for the express purpose of hearing and deciding disputes between the carriers and their employees, so that no controversy need lead to an interruption in interstate transportation.

"It was inevitable that many wage disputes should arise. Wages had mounted upward, necessarily and justly, during the war upheaval, likewise the cost of transportation, so that the higher wages might be paid. It was inevitable that some readjustments should follow. Naturally these readjustments were resisted. The administrative Government neither advocated nor opposed. It only held that the Labor Board was the lawful agency of the Government to hear and decide disputes, and its authority must be sustained, as the law contemplates. This must be so, whether the carriers or the employees ignore its decisions.

"Unhappily a number of decisions of this board had been ignored by the carriers. In only one instance, however, had a decision, challenged by a carrier, been brought to the attention of the Department of Justice, and this decision was promptly carried to the courts and has recently been sustained in the Federal Court of Appeals. The public or the Executive had no knowledge of the ignored decisions in other cases, because they did not hinder transportation. When these failures of many of the carriers to abide by decisions of the board were brought to my attention, I could more fairly appraise the feelings of the strikers, though they had a remedy without seeking to paralyze interstate commerce.

"The law creating the Railroad Labor Board is inadequate. Contrary to popular impression, it has little or no power to enforce its decisions. It can impose no penalties on either party disregarding its decisions. It cannot halt a strike, and manifestly Congress

deliberately omitted the enactment of compulsory arbitration. The decisions of the board must be made enforceable and effective against carriers and employees alike. But the law is new, and no perfection of it by Congress at this moment could be helpful in the present threatened paralysis of transportation.

"Happily it is always lawful and ofttimes possible to settle disputes outside of court, so, in a desire to serve public welfare, I ventured upon an attempt at mediation. Those who had preceded me in attempted settlements had made some progress. I submitted to the officials of the striking employees and the chairman of the Association of Railway Executives, in writing, on the same day, a tentative proposal for settlement. Knowing that some of the carriers had offended by ignoring the decisions of the board and the employees had struck when they had a remedy without the strike, I felt it was best to start all over again, resume work, all to agree to abide faithfully by the board's decisions, make it a real tribunal of peace in transportation, and everybody serve the public. The barrier to be surmounted was the question of seniority. By the workmen these rights are held to be sacred, and unsurrendered by a strike. By the carriers the preservation of seniority is the weapon of discipline on the one hand and the reward of faithful employees on the other. It has been an almost invariable rule that when strikes have been lost seniority and its advantages have been surrendered; when strikes have been settled seniority has been restored.

"In the tentative proposal which I sponsored it was provided that everybody should go to work; with seniority rights unimpaired, that there should be no discrimination by either workmen or carriers against workmen who did or did not strike. I realized that the proposal must carry a disappointment to employees who had inherited promotion by staying loyally on the job, and to such new men as had sought jobs looking to permanent employment, but I wanted the fresh start and maintained transportation service, and I appraised the disappointment of the few to be less important than the impending misfortune to the Nation. It was not what I would ask ordinarily to be considered or conceded, but at that moment of deep anxiety, with the coal shortage gravely menacing, I was thinking of the pressing demands of the welfare of the whole people. I believed the sacrifice brought to the men involved could be amply compensated for by the carriers in practical ways. I believed that the matter of transcendent importance was the acceptance of the proposal to respect the Labor Board's decisions on the questions which formed the issue at the time of the strike. The public compensation would be complete in guarding by law against recurrence.

"The proposal was rejected by the carriers. Though the rejection did not end all negotiation, it left the Government only one course—to call the striking workmen to return to work, to call the carriers to assign them to work, and leave the dispute about seniority to the Labor Board for decision. When negotiation or mediation fails, this is the course contemplated by the law and the Government can have no chart for its course except the law.

"To this call a majority of the carriers responded favorably, proposing to re-employ all strikers except those guilty of violence against workmen or property, to restore the striking workmen to their old positions where vacant, or to like positions where vacancies are filled; questions of seniority which cannot be settled between the employer and employees to go to the Labor Board for decision. The minority of the carriers proposed to assign jobs to workmen on strike only where the positions were vacant. Neither proposal has been accepted.

"Thus the narrative brings us to the present moment, but it has not included the developments which have heightened the Government's concern. Sympathetic strikes have developed here and there, seriously impairing interstate commerce. Deserted transcontinental trains in the desert regions of the Southwest have revealed the cruelty and contempt for law on the part of some railway employees, who have conspired to paralyze transportation, and lawlessness and violence in a hundred places have revealed the failure of the striking unions to hold their forces to law observance. Men who refused to strike and who have braved insult and assault and risked their lives to serve a public need have been cruelly attacked and wounded or killed. Men seeking work and guards attempting to protect lives and property, even officers of the Federal Government, have been assaulted, humiliated, and hindered in their duties. Strikers have armed themselves and gathered in mobs about railroad shops to offer armed violence to any man attempting to go to work. There is a state of lawlessness shocking to every conception of American law and order and violating the cherished guaranties of American freedom. At no time has the Federal Government been unready or unwilling to give its support to maintain law and order and restrain violence, but in no case has State authority confessed its inability to cope with the situation and asked for Federal assistance.

"Under these conditions of hindrance and intimidation there has been such a lack of care of motive power that the deterioration of locomotives and the noncompliance with the safety requirements of the law are threatening the breakdown of transportation. This very serious menace is magnified by the millions of losses to fruit growers and other producers of perishable foodstuffs, and comparable losses to farmers who depend on transportation to market their grains at harvest time. Even worse, it is hindering the transport of available coal when industry is on the verge of paralysis because of coal shortage, and life and health are menaced by coal famine in the great centers of population. Surely the threatening conditions must impress the Congress and the country that no body of men, whether limited in numbers and responsible for railway management or powerful in numbers and the necessary forces in railroad operation, shall be permitted to choose a course which so imperils public welfare. Neither organizations of employers nor workingmen's unions may escape responsibility. When related to a public service the mere fact of organization magnifies that responsibility and public interest transcends that of either grouped capital or organized labor.

"Another development is so significant that the hardships of the moment may well be endured to rivet popular attention to necessary settlement. It is fundamental to all freedom that all men have unquestioned rights to lawful pursuits, to work and to live and choose their own lawful ways to happiness. In these strikes these rights have been denied by assault and violence, by armed lawlessness. In many communities the municipal authorities have winked at these violations, until liberty is a mockery and the law a matter of community contempt. It is fair to say that the great mass of organized workmen do not approve, but they seem helpless to hinder. These conditions cannot remain in free America. If free men cannot toil according to their own lawful choosing, all our constitutional guaranties born of democracy are surrendered to mobocracy and the freedom of a hundred millions is surrendered to the small minority which would have no law.

"It is not my thought to ask Congress to deal with these fundamental problems at this time. No hasty action would contribute to the solution of the present critical situation. There is existing law by which to settle the prevailing disputes. There are statutes forbidding conspiracy to hinder interstate commerce. There are laws to assure the highest possible safety in railway service. It is my purpose to invoke these laws, civil and criminal, against all offenders alike.

"The legal safeguarding against like menaces in the future must be worked out when no passion sways, when no prejudice influences, when the whole problem may be appraised, and the public welfare may be asserted against any and every interest which assumes authority beyond that of the Government itself.

"In the weeks of patient conference and attempts at settlement I have come to appraise another element in the engrossing industrial dispute of which it is only fair to take cognizance. It is in some degree responsible for the strikes and has hindered attempts at adjustment. I refer to the warfare on the unions of labor. The government has no sympathy or approval for this element of discord in the ranks of industry. Any legislation in the future must be as free from this element of trouble making as it is from labor extremists who strive for class domination. We recognize these organizations in the law, and we must accredit them with incalculable contribution to labor's uplift. It is of public interest to preserve them and profit by the good that is in them, but we must check the abuses and the excesses which conflict with public interest, precisely as we have been progressively legislating to prevent capitalistic, corporate, or managerial domination which is contrary to public welfare. We also recognize the right of employers and employees alike, within the law, to establish their methods of conducting business, to choose their employment and to determine their relations with each other. We must reassert the doctrine that in this Republic the first obligation and the first allegiance of every citizen, high or low, is to his government, and to hold that government to be the just and unchallenged sponsor for public welfare, and the liberty, security, and rights of all its citizens. No matter what clouds may gather, no matter what storms may ensue, no matter what hardships may attend or what sacrifice my be necessary, government by law must and will be sustained.

"Wherefore I am resolved to use all the power of the government to maintain transportation, and sustain the right of men to work."

Legislation as to Coal Recommended

As to the coal situation, the President asked at the hands of Congress the authority to create a government commission independent of the industry to make a searching investigation into the whole coal industry, with provision for its lawful activities and the bestowal of authority to reveal every phase of coal production, sale and distribution, "to advise as to fair wages and as to conditions of labor and to bring protection to all and point the way to continuity of production and the better economic functioning of the industry in the future." Unless a cure is found for the

economic ills which affect the industry, he said, "we shall be faced with a like menacing situation on next April 1 on the expiration of the wage contracts which are now being made."

To deal with the conditions resulting from the coal strike he recommended immediate provision for a form of temporary control of distribution and prices through "a temporary national coal agency, with needed capital, to purchase, sell and distribute coal which is carried in interstate shipment." The purpose is to give the necessary legal authority to the present emergency coal distribution organization created by Secretary Hoover and functioning under the direction of Henry B. Spencer subject to a committee appointed by the President. President Harding said in his message that he did not mean that all interstate coal shall be handled by such a federal organization; perhaps none will be necessary, but "it will restore its capital to the public treasury and will be the instrumentality of guarding the public interest where private conscience is insensible to a public need."

This proposal does not relate to any possible employment of the national agency in relation to intrastate transactions, the President made clear. "Price restraint and equitable distribution in intrastate shipments," he said, "is a responsibility of the state's own government" and "in such voluntary activities as have been carried on thus far the federal government has endeavored to re-establish the authority and responsibility in the states which was undermined in the necessary centralization of authority during the World War."

"The almost total exhaustion of stocks of coal, the crippled condition of the railways, the distressed situation that has arisen and might grow worse in our great cities due to the shortage of anthracite, the suffering which might arise in the Northwest through failure to meet winter needs by lake transportation, all these added to the possibility of outrageous price demands, in spite of the most zealous voluntary efforts of the government to restrain them, make it necessary to ask you to consider at once some form of temporary control of distribution and prices."

President Replying to Critics

The President was plainly giving his answer to many criticisms of the course he has adopted in dealing with the two strike situations. One class of criticism which he attempted to meet was that arising from impatience because he had not taken more positive and direct action to bring about some kind of a settlement by "big stick" methods. Another class was that which blamed the President for having interfered at all and by continually holding forth the expectation of a settlement lending encouragement to the strikers to hold on a little longer.

To the first class of critics the reply is in effect that there is no big stick among the present furniture of the White House.

The idea of taking over the railroads was not mentioned, perhaps because it represents a stick rather too heavy to swing for such a situation as we have so far. The President pointed out that the Labor Board has no power to halt a strike, that Congress deliberately omitted the enactment of compulsory arbitration and that, therefore, the federal government had no direct power to require a settlement.

To the second class of criticism his answer is found in his statements regarding the seriousness of the situation and that in a desire to serve the public welfare he had ventured upon an attempt at mediation. He made no attempt to defend on its merits his original proposal that the strikers be returned to work with seniority unimpaired, referring to it as a "tentative proposal," not what he would ask ordinarily to be considered or conceded, but as one that would represent a "fresh start" by restoring the status that existed before the strike and that would have demanded a sacrifice of some of the men involved, less important than the "impending misfortune to the nation."

There is also a third type of criticism, voiced by those who condemn the President for not having followed up more actively his proclamation of July 11 in which he said that those who are not satisfied with the wages fixed by the Labor Board must not be allowed to interfere with those who are willing to accept them, instead of holding conferences with the strike leaders in an effort to compromise. To this class of critics the President replies that the duty of preserving law and order and restraining violence is primarily the function of the state and local authorities, who had not yet confessed inability to cope with the situation nor asked for federal assistance. He also attempted to distribute to some extent the responsibility for the conditions resulting from the strike, among both the companies and the unions, although he had pointed out that the strike was called by the unions against a decision of the Labor Board.

However, whereas for a time he had attempted to remain completely neutral and act solely as a mediator, recent events and a clearer understanding had led him to a point where "the simple but significant truth was revealed that, except for such coal as comes from the districts worked by unorganized miners, the country is at the mercy of the United Mine Workers."

There was no mincing of words when he referred to the "sympathetic strikes" that have developed here and there, "the cruelty and contempt of law" on the part of some railway employees, who he said have "conspired to paralyze transportation," and "lawlessness and violence in a hundred places" that have revealed the "failure of the striking unions to hold their forces to law observance," but the President endeavored to retain a neutral attitude when he said that "neither organizations of employers nor workingmen's unions may escape responsibility," and that the government has no sympathy for the "warfare on the unions," without commenting on the war against private ownership of railroads and coal mines. He referred to the ignoring of a number of decisions of the Labor Board by many of the carriers, although he pointed out that they did not hinder transportation and that the strikers had a remedy without seeking to paralyze interstate commerce. While admitting the incalculable contribution to labor's uplift made by the labor unions, however, and the public interest that the good in them be preserved, he declared that the abuses and the excesses which conflict with public interest must be checked in the same way that forms of regulation have been devised to deal with the abuses charged to the corporations.

He also referred to "the deterioration of locomotives and the non-compliance with the safety requirements of the law" as "threatening the break-down of transportation," although Chairman McChord of the Interstate Commerce Commission, who furnished his information on this subject, had qualified the statement by the words "on certain roads."

Having reached the point of calling some things by their right names, the President found a considerable body of existing law available, although there is no law against strikes. "There is existing law by which to settle prevailing disputes"—the law setting up the Labor Board as an arbiter; "there are statutes forbidding conspiracy to hinder interstate commerce"—notably the Sherman law; "there are laws to assure the highest possible safety in railway service"—the locomotive inspection and safety appliance laws. It was his purpose, the President said, to invoke these laws, civil and criminal, against all offenders alike.

The tone of the President's address undoubtedly strengthened to some extent the position of the railroad executives meeting in New York with a committee of labor leaders, who were endeavoring to induce or threaten them into a compromise. They have repeatedly told the President that if assured of adequate protection for the men who are willing

to work, and whose right to protection has been repeatedly proclaimed by the President, the strike would take care of itself and there would be no need of sacrificing the employees who had "inherited promotion by staying loyally on the job" and "such new men as had sought jobs looking to permanent employment."

Means to Maintain Full Force of Law and Order

Although it was not given out at the White House, the President has given one of the reasons why he has not ordered the use of federal troops to furnish protection to the working shopmen in a letter in reply to one from W. H. Chandler, president of the National Industrial Traffic League. "If I faced only such a condition as Mr. Cleveland had to deal with," he said, "it would be a very simple matter to handle it. I think you ought to appreciate the difference between meeting a disturbed situation in one center of population and having to deal with a like situation in perhaps a thousand localities throughout the United States. It is useless to talk about weakening. This government means to maintain the full force of law and order and such majesty of power as it possesses. Its purpose does not in any way seem inconsistent with every reasonable effort to avoid conflict."

Administration Hopeful of Settlement

After the address the Administration apparently "marked time," as far as the railroad situation is concerned, awaiting the results of the meeting in New York on Wednesday, as to which the government officers professed to be optimistic in spite of statements from New York holding forth little hope of a settlement. Alfred P. Thom, counsel for the Association of Railway Executives, called on the President on Saturday and is understood to have reported on the conferences of Thursday and Friday. On Tuesday it was stated at the White House that the President had hopes of a settlement as a result of the New York conference.

Congress Begins Work on Legislation Asked by President

Congressional leaders at once began preparations for the enactment of the legislation asked by the President providing for the creation of a coal commission and bills for that purpose have been introduced by Senator Borah and Representative Winslow, but opposition at once developed to the idea of empowering a committee to purchase and sell coal. No action is expected at this session on amendments to the Transportation Act. The President is insistent that the coal commission shall be composed only of members representing the public, inasmuch as the operators and miners have arranged for the formation of a partisan commission.

The House committee on interstate and foreign commerce held a meeting on Monday on the Winslow bill, which provides for the creation of the United States Coal Commission, composed of not more than nine members, to be appointed by the President, to submit its first report not later than January 1. Plans were made for rushing this bill through the House. Senator Borah also called a meeting of the Senate committee on labor for Tuesday to consider his bill.

Bills to carry out the President's plan for temporary price control were being drafted by the Department of Justice and were to be submitted to the President's coal committee.

A bill requiring the Interstate Commerce Commission to regulate the compensation of all railroad employees and officers and to place in the hands of the commission the functions now exercised by the Railroad Labor Board has been introduced in the House of Representatives by Representative Ward of North Carolina.

Representative Dickinson of Iowa introduced a bill providing that decisions of the Railroad Labor Board shall not become effective for 150 days.

In spite of the peace talk which had pervaded Washington for several days, on the strength of the reports that a plan would be agreed upon to take back the strikers now and postpone the seniority question until it came time to lay off some of the men several months later, the executive counsel of the American Federation of Labor on Monday addressed an appeal to all organized labor urging the moral and financial support in behalf of the organization in its railway employees department now on strike to "resist the imposition of unfair terms and conditions of employment."

Federation of Labor Appeals for Support of Strikers

"The struggle in which these workers are involved is one which is important, not only to themselves and to their organizations, but to all organized workers and to all Americans who love justice and fair dealing," the appeal said in part.

"It is essential to the well-being of the men on strike, to the well-being of all workers and to the well-being of our national industrial organization that justice shall prevail in the struggle now going on in the railroad industry.

"It must be clear that the policy which has been pursued by the railroads has been entirely in harmony with the policies of all organizations of employers, which, since the armistice, have been seeking to weaken and destroy the voluntary organizations of the workers. The railroads have been engaged in this effort from the moment government control was relinquished on March 1, 1920.

"Finally, the decisions of the board compelled resistance on the part of the workers through suspension of work. A wage of 23 cents per hour was established for section men, and this wage is the basis upon which all other wages are calculated.

"In addition to this the board ordered the abolition of the payment of time and a half for work done on Sundays and holidays. It was sought to impose grave injustice upon the workers through rulings of the Labor Board, while the railroads had consistently violated and repudiated rulings of that board from the beginning.

"The railroad shop workers are on strike in an endeavor to secure a living wage for the maintenance of the American standard of living. They are on strike for the maintenance of reasonable working conditions and for the maintenance of the right of organization.

"It goes without saying that financial assistance is needed, especially when it is recalled that most, if not all, of the organizations of employees now on strike have thousands of members engaged in other industries who have been, or who are now, also on strike. Therefore, their financial condition is at present incapable of meeting the barest wants of their needy, struggling men and their families.

"It is to be hoped that every union and its membership, individually and collectively, again will demonstrate its solidarity by coming generously and immediately to the assistance of the striking railway shop craft organizations. They are fighting the fight of all workers. They should have all of the moral and financial assistance which our movement can give, and your Executive Council earnestly hopes that your action will be as prompt and as generous as the circumstances warrant."

Secretary Weeks of the War Department has received an opinion from the acting Judge Advocate General of the Army that existing labor troubles on railroads and in mines do not constitute an emergency authorizing recruiting the regular army to war strength and that there is no authority vested in the Executive branch of the government to draft men for military and other service in time of peace. Secretary Weeks said he had asked for an opinion on these points not because the government contemplated any such action, but to clear up any uncertainty that might exist in the minds of federal officials and to put the public mind at ease on the subject.

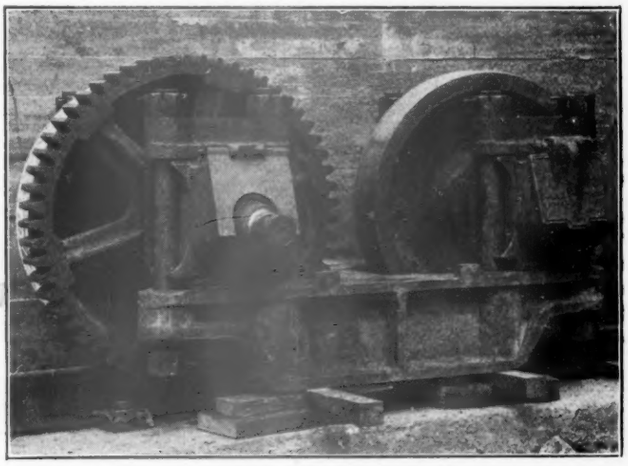
Each Half of the Table Is Virtually an Independent Unit

Twin Span Turntable Reduces Load on Center

Innovation in the Design of this Roundhouse Facility Embodies Many Novel Features

SINCE THEIR EARLIEST development turntables have been almost entirely of the center bearing type. As the weight of locomotives has grown heavier and they have assumed greatly increased lengths, the problem of the turntable has become an increasingly difficult one. It has been necessary to provide a center capable of sustaining ever-increasing loads and higher bearing pressures while the girders or trusses have had to be increased enormously in order that they could serve as double cantilevers to balance the long, heavy locomotives on a single support. Various schemes have been undertaken to overcome these difficulties, among which was a table built about three years ago by the Pennsylvania which was designed to take bearing on the circular rail as well as the center during the turning operation. In other words, the turntable was designed as a continuous girder supported at the ends as well as the center under all conditions of loading. This required that the center bearing be equipped with a means of adjustment so as to take care of any possible settlement of the center which would tend to increase the proportion of the load carried by the circle rail.

More recently a new table has been brought forth embodying a still greater departure from conventional methods. Instead of building the girder continuous across the center, two separate girder spans are provided with simple bearings at the center, thus affording a type of turntable construction in which the load carried on the center is reduced appreciably, and in which the operation of the turntable becomes largely independent of ordinary settlement of the center or variations in the level of the circular rail. Several of these tables have been built and are in operation, so that the construction may be treated as a thoroughly practical development. The construction of a turntable along lines involving such a marked departure from usual practice has imposed a great many new problems on the designer, and these have resulted in the development of many original details. These may be listed briefly as an articulate connection of the girders over the center, an original type of flat disc center bearing, heavy end trucks capable of carrying the imposed live load, turning machinery connected direct to one of the truck wheels at each end and a heavy, rigid circle rail construction insuring a circle rail of uniform elevation and alinement that will insure smooth operation of the table.



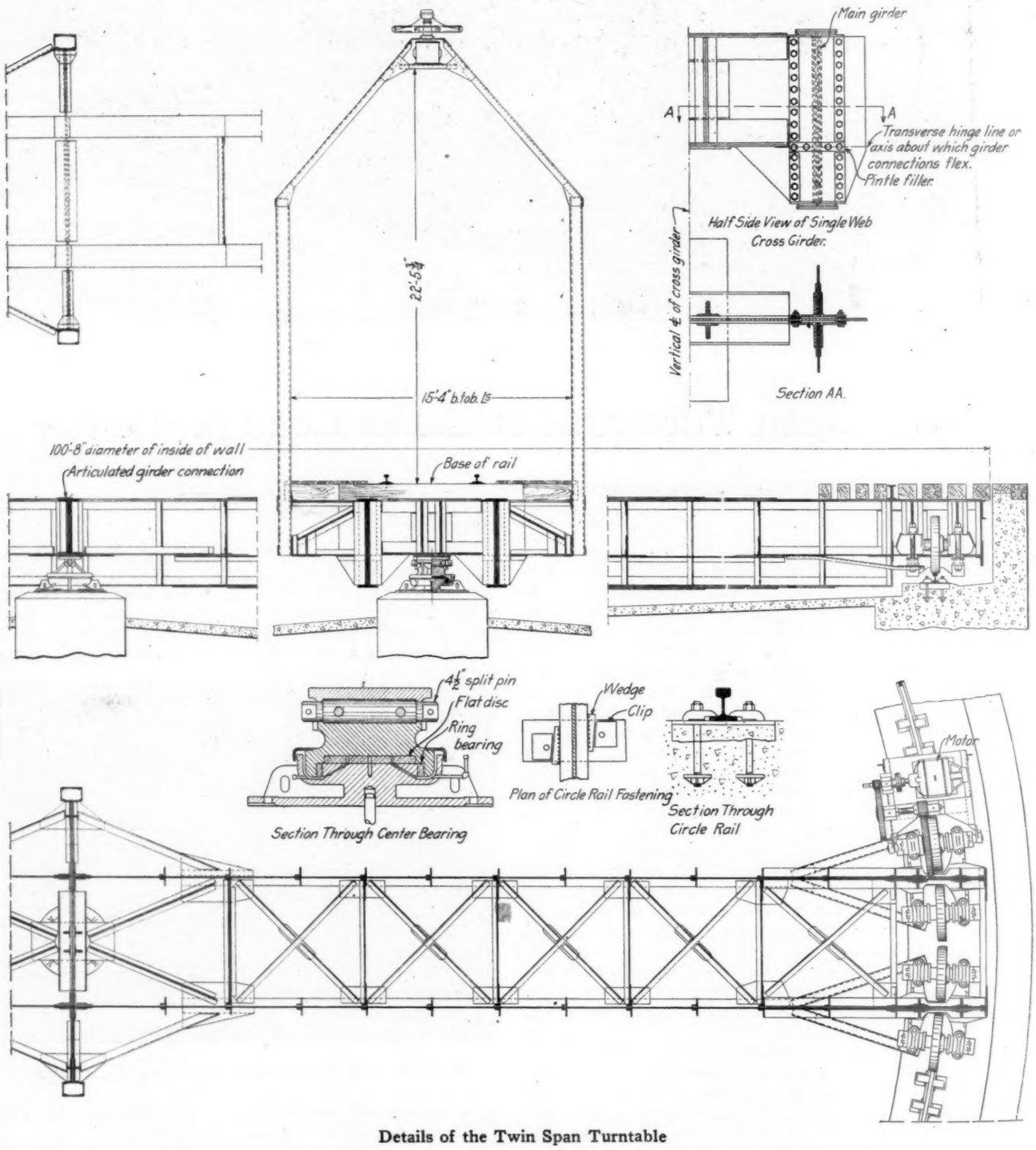
There Are Two End Trucks at Each End of the Table

The main girders of the table are framed into a cross or loading girder, in turn supported on the center bearing. The connection of the main girder to the cross girder is accomplished by means of connection angles with the addition of filler plates. This affords ample opportunity for a hinge action of the connection of the main girder to the cross girder

through the flexibility of the connection angles. As a result of this arrangement each span of the turntable is virtually provided with three points of support, one at the center, and one at each of the trucks.

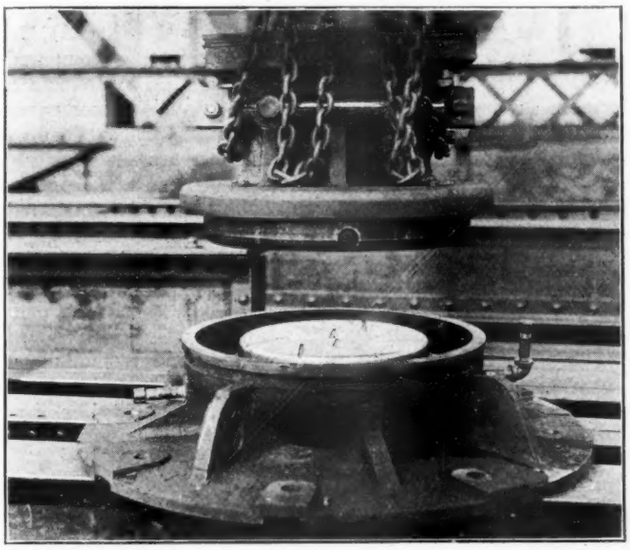
The center is bolted beneath the junction of the lateral system and the cross girder and consists of the usual bridge shoe unit of upper shoe, horizontal pin and lower shoe, set on a flat phosphor bronze disc, which in turn rests on an anchored base or distributing casting. A second phosphor bronze bearing is provided in the form of a ring surrounding a vertical point forming a part of the base casting for the purpose of transmitting the lateral and longitudinal forces to the base. The center bearing is designed to be immersed in oil and trapped so that it can run in flood waters without damage. The bearing is also arranged so that the raising of the table not more than 1/16 in. will permit the removal of the shoe and disc for inspection, replacement or repairs.

With a considerable portion of the load of the table and locomotive carried on the circle rail during the turning of the table it is obviously necessary to give careful attention to the design of the end trucks. These are of a heavy construction. The two girders of the table are supported directly on heavy cast steel truck frames of H section by



Details of the Twin Span Turntable

means of a bearing plate that provides for the radial position of the frames. This arrangement provides for thorough equalization of the girder load on the two wheels of each truck. From the truck frames the load is transmitted to the journal boxes of the wheel by means of three-inch cold rolled bolts secured through a loading cap resting on top of the journal boxes. The wheels are standard forged, pressed or rolled steel car wheels, except that the flanges have been removed and the treads have been coned to the center of the table. The journal boxes, of which there are eight for each end of the table, are standard M. C. B. journals with



The Upper and Lower Sections of the Center Bearing

standard boxes, wedges, brasses, lids, guards, waste and lubricants. In other words, the truck mechanism conforms strictly to established railroad practice.

The power for turning the table is applied directly to one of the truck wheels by a train of gears from an electric motor which is suspended in a frame attached to the end of the table. Ordinarily, two motors are provided, one at each end of the table, but the manufacturers recommend that one of these motors be held in reserve, as the table is turned readily by one motor. Each of the turning units is normally equipped with a hand power device for use in emergency. A foot brake is also provided; this and other controlling devices being placed in an operator's cab located directly above one of the motors. The current take-off is readily provided by means of a structural steel current collector arch mounted over the cross girder.

Circle Rail of Heavy Construction

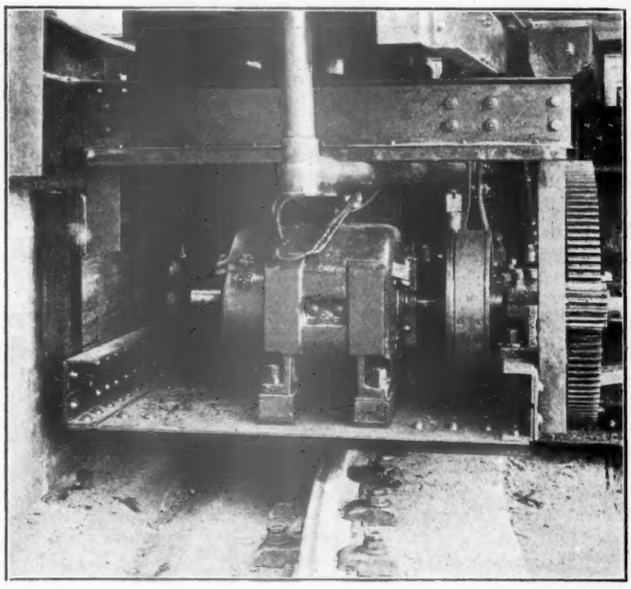
To insure a circle rail of uniform surface and alinement subject to very little deflection under load, a 130-lb. rail of P. S. section is provided with a special fastening to insure thorough anchorage and adjustment. The support for the rail consists of special steel T-ties of Bethlehem H-section imbedded in a concrete foundation. The rail is securely fastened to the ties by means of heavy clips with bolts and nuts and serrated wedges driven between the flanges of the rail and the wedge seats in each clip. This affords ready adjustment of the rail for alinement to a true circle and when the alinement has been secured perfectly, molten spelter is poured over the fastenings to hold them in position.

Advantages

Some of the advantages to which attention has been called by the manufacturer are among the following:

The table is cheaper in first cost, particularly where it is installed to replace a center bearing table designed to take shorter and lighter engines. Owing to the distribution of the load on the center and end trucks of the twin span turntable, the existing center foundation will usually be sufficient as it had to take the entire load of the old table. The girders of the twin span table are relatively shallow and it is unlikely that the pit will have to be deepened. Finally, as there is no necessity of balancing the load the twin span table will turn an engine having a wheel base practically as long as the table, so that it may be possible to use the same length of table. In short, a twin span table could be placed in the existing pit that would handle locomotives 90 per cent heavier and 20 per cent longer than the maximum capacity of the center bearing table it replaced. It is obvious that the same saving in size of table and pit occur in new installations. The twin span table is efficient in operation, as no time is lost in balancing the engine and the table can be started as soon as the engine is completely on. The friction of the journals is sufficient to hold the table stationary, so end locks are unnecessary. Because the ends of the table are supported on a very solidly constructed circular rail and are accurately level with the approach rails the usual hammer in running engines on or off the table is avoided. The flexible connection of the girders at the center makes settlement of an inch or so in the center foundation of little or no consequence.

The twin span turntable requires more power than the



The Motor and Housing. Note Also the Circle Rail Construction

balanced type but the additional cost is said to be negligible, considering the saving of time in handling engines, lesser likelihood of damaging the engines and the longer life of the table.

Patents on this type of articulated turntable are owned by the Bethlehem Steel Bridge Corporation, Bethlehem, Pa., which has developed detail plans for this table to fit various requirements. A number of tables of this type have been built for the Chesapeake & Ohio, the Atlantic Coast Lines and the New York Central and a table is now being installed on the Richmond, Fredericksburg & Potomac.

CANNED SALMON, by the shipload is now said to be moving from Japan to Europe by way of the Panama Canal. The Japanese steamer Taketoio Maru, thus loaded, recently stopped at Nanaimo, B. C., for coal.

British Revise Rail Specifications

THE BRITISH Engineering Standards Association, which is an organization of the Institution of Civil Engineers, the Institution of Mechanical Engineers, the Institution of Naval Architects, the Iron and Steel Institute and the Institution of Electrical Engineers of Great Britain, has just issued a revision of its standard specifications for bull head rails, with revised standard sections for rails weighing from 60 lb. to 100 lb. per yard inclusive. The present specification is a revision of one first issued in 1904 and revised in 1909.

Among the more important modifications are the following:

(1) Two classes of rails are now included, namely, ordinary carbon and higher carbon rails, and separate chemical analyses are specified for the Bessemer and open hearth processes.

(2) The position in the head of the rail from which the drillings and the test pieces for the chemical analyses and tensile tests are to be taken is now defined.

(3) In the drop test the height of the drop for B.S. Section No. 90 has been reduced to 18 ft.; the use of crop ends is allowed and the measurement of permanent set after the first blow has been omitted. The test is required to be carried out upon the British standard falling weight testing machine.

(4) The range of tensile breaking strengths for ordinary carbon rails has been increased from 40 to 48 tons per square inch, to 42 to 53 tons per square inch, and a range of tensile strengths for higher carbon rails inserted.

(5) The testing procedure before rejection has been set out in detail.

(6) Provision is made for ascertaining the weight of the rails during rolling.

(7) The brand or mark of the Association is now only intended to indicate that the rail is of British Standard section.

(8) An arbitration clause has been included.

The sections have also been modified, the depth of the head of the 85, 90 and 95 lb. rails having been increased by 1/16 in., 5/64 in., and 1/32 in. respectively with the object of securing a longer life. A corresponding amount being taken off the foot in each case to preserve the same weight and depth of the rail.

Freight Car Loading

WASHINGTON, D. C.

CAR LOADING showed a slight increase during the week of August 12 to 852,480 as compared with 851,351 the week before. This was an increase as compared with the corresponding week of 1921 of 44,311 cars and a decrease as compared with 1920 of 118,689. As compared with the previous week there was an increase in coal loading of 5,313, to 84,559. There were also increases in livestock, forest products, ore and merchandise, but decreases in grain and grain products, coke and miscellaneous. As compared with last year there was a decrease in grain and grain products and coal and in the Southwestern district. All other districts showed increases. The loading of all commodities except coal was 768,021, which was greater than the corresponding figure for 1920.

The freight car surplus during the period from August 1 to 8 was reduced to 153,880, while the shortages increased to 32,314. The surpluses included only 15,873 box cars while there were shortages amounting to 23,032 box cars, and there were 118,044 surplus coal cars while shortages were also reported amounting to 5,964.

The percentage of cars placed to cars required for bituminous coal loading during the week of August 5 increased to 85, as compared with 71 the week before. Only the Pocahontas and Southern regions placed less than 100 per cent, 66 and 55 per cent respectively. The percentage of orders filled for open-top cars in general also increased, from 86 in the week of July 29 to 87 in the week of August 5.

REVENUE FREIGHT LOADED

SUMMARY—ALL DISTRICTS, COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO. WEEK ENDED SATURDAY, AUGUST 12, 1922

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L.C.L.	Miscellaneous	Total revenue freight loaded: This year 1922	Corresponding year 1921	Corresponding year 1920
Eastern	1922	11,006	2,807	8,597	1,494	5,388	6,517	67,164	94,872	197,845	.....	.....
	1921	10,035	2,561	42,206	973	4,470	2,333	56,548	77,427	.....	196,553	237,824
Allegheny	1922	3,896	2,749	20,511	4,183	3,199	12,645	48,904	77,785	173,872	.....	.....
	1921	3,302	2,640	45,019	2,283	2,477	7,119	44,470	52,029	.....	159,339	199,378
Pocahontas	1922	236	204	22,297	237	1,022	33	3,720	2,637	30,386	.....	.....
	1921	173	228	19,340	88	1,107	72	4,783	3,351	.....	29,142	37,203
Southern	1922	4,240	2,152	17,981	965	17,027	1,228	34,713	32,607	110,913	.....	.....
	1921	3,813	1,966	20,721	272	14,272	187	36,222	31,528	.....	108,981	130,986
Northwestern	1922	13,802	6,622	5,995	968	14,799	46,336	29,087	33,889	151,498	.....	.....
	1921	16,043	6,407	8,328	431	10,714	21,822	27,993	33,756	.....	125,494	163,733
Central Western	1922	18,165	10,596	5,918	378	7,382	1,956	32,449	51,575	128,419	.....	.....
	1921	21,438	9,518	17,046	136	5,865	741	30,613	41,540	.....	126,897	135,858
Southwestern	1922	6,222	3,240	3,260	195	7,346	482	14,615	24,287	59,647	.....	.....
	1921	6,522	2,987	4,231	172	6,058	675	15,582	25,636	.....	61,863	66,287
Total Western districts.	1922	38,189	20,458	15,173	1,541	29,527	48,774	76,151	109,751	339,564	.....	.....
	1921	44,003	18,912	29,605	739	22,637	23,238	74,188	100,932	.....	314,254	365,878
Total. all roads	1922	57,567	28,370	84,559	8,420	56,163	69,197	230,652	317,652	852,580	.....	.....
	1921	61,326	26,307	156,891	4,355	44,963	32,949	216,211	265,267	.....	808,269	.....
	1920	38,708	26,574	221,844	13,933	65,514	77,591	200,459	326,646	.....	.....	971,269
Increase compared	1921	.....	2,063	.....	4,065	11,200	36,248	14,441	52,385	44,311	.....	.....
Decrease compared	1921	3,759	.....	72,332	.....	.....	.....	.....	.....	.....	.....	.....
Increase compared	1920	18,859	1,796	.....	.....	.....	.....	30,193	.....	.....	.....	.....
Decrease compared	1920	.....	.....	137,285	5,513	9,351	8,394	.....	8,994	118,689	.....	.....
August 12	1922	57,567	28,370	84,559	8,420	56,163	69,197	230,652	317,652	852,580	808,269	971,269
August 5	1922	58,512	26,507	79,246	8,442	55,898	66,218	229,287	327,241	851,351	786,178	935,730
July 29	1922	59,170	27,104	76,374	9,112	58,197	64,147	234,567	331,062	859,733	795,432	936,366
July 22	1922	57,566	27,455	76,060	9,949	58,512	64,417	239,510	327,655	861,124	788,034	928,418
July 15	1922	48,911	30,216	77,334	9,698	58,121	69,162	241,180	326,285	860,907	774,884	942,851

Compiled by Car Service Division, American Railway Association.

Locomotive Fuel, the Life Blood of Transportation*

How Officers in All Departments Can Help to Save Fuel —Need for Refined Locomotives

By G. M. Basford
Consulting Engineer, Lima Locomotive Works

FUEL IS THE very life blood of transportation. We must use it as if we thought so. We must not treat it as we are tempted to treat water in the rainy season. We must not burn it as if there were a lot more where this came from.

Before those who direct and control the use of fuel on railroads lies a wonderful opportunity for money making, money saving. Wonderful improvements have already been made. More and even greater possibilities are available.

A fortunate fact about every feature in fuel conservation is that it helps railroad operation in ways that fuel does not directly touch. No one ever does anything to make more effective use of fuel without helping the road in other ways. Therefore, to co-ordinate all these possibilities and to organize the road into a Committee of the Whole to conserve fuel, fuel officers need to be very big, broad, influential men. They need to grasp and improve to the utmost the opportunity that lies before them. It is fortunate that they now have this opportunity and this organization back of them.

Fuel must take a new place in your hands. The fuel officer who is to bring fuel to its proper eminence has many strings to his bow. The fuel officer has back of him the locomotive builders with their extraordinary experience. He has many other supporters who have spent lifetimes in developing safe, sound and sane vitalizing factors that have never yet been employed to the limit of their capacity for improving the real efficiency of locomotives. He must also have the entire railroad back of him.

When business comes on again, look out! You have less railroad today than you had five years ago. You are short about 5,000 locomotives to keep the equipment curve anywhere near the curve of growth of the nation. C. B. Peck and V. Z. Caracristi show that locomotives are not used as efficiently now as they were 20 years ago, because of lack of maintenance facilities, but we know that as machines they are vastly more efficient. It is also clear that lack of adequate shop facilities is a great factor obstructing the application of fuel saving, capacity increasing improvements to locomotives now in service, each of which should, if run at all, run as economically and as efficiently, weight for weight, as the latest new power. These unmodernized engines are wicked wasters of fuel. To fix this situation right, new shop machinery is needed. This illustrates the breadth of the opportunity of the fuel officer. Adequacy of the equipment of shops affects his fuel record in several ways. It materially affects the number of new engines needed and controls the improvement of old ones. It also controls the condition of the power that is burning up his fuel.

As a railroad officer, acquire all the knowledge of the latest locomotive progress, learn of the perfectly sane and safe possibilities of power and its use, never yet put into general practice, and knowing to your own satisfaction that big improvements may be made, you may say, "As a railroad officer I cannot afford not to see this done." To the public the new locomotive and upkeep of present locomotives are more important than the question of rates and will continue to mean more to the public as to their own pockets, but the public does not know it.

*Abstract of a paper presented before the International Railway Fuel Association, May 23, 1922.

Purchasing Agent

Why not help him by showing him what coal to buy and why let him supply unimproved real estate? Thirty-two years ago a big western road, then poor, now very prosperous, tested seven coals for main line service. Differentials in price were established. Poor local coals were discarded and truly economical coals provided. Operation of the road instantly reflected the value of the right fuel. Nothing means more than this in making long locomotive runs. Careful roads buy the coal that is cheapest in the end. They pay more to get clean coal and save by doing it. Then the coal should be uniform or locomotives cannot be kept right as to drafting. Drafting has been a difficult problem on many roads. Changing coal discourages efforts to keep front ends "right."

Yardmaster

Give this very efficient officer the kind of switch engines he needs; powerful, efficient, economical, snappy ones. Give him road engines that will clear the ladder tracks quickly. He knows, better than anyone else, the value of locomotive improvements that make for better acceleration of trains over the tracks that tie up the yard until they get away. Then watch him make up trains for an even load on the road, avoiding fleeting. Bunching trains raises havoc with fuel performance. Watch him send road engines back to the roundhouse singly, again avoiding the fleeting that clogs facilities of all kinds, particularly locomotive terminals, and piles up stand-by losses.

Do you not think that you can classify trains at terminals so as to main track some of them through other terminals? One road does this with 10 to 15 per cent of its freight trains. Avoid switching trains at terminals whenever possible. This makes for long runs.

Dispatcher

No one can do more for fuel than this officer when he has the tools to work with. Everything he does for fuel does even more for himself. He does not want to fleet trains. He wants them to get away and run. He needs efficient power, first in the yards and then on the road. He needs such tonnage rating and careful loading for all engines as will enable him to give a track for the big powerful ones to use without being checked and harassed by old unmodernized ones. He knows that it costs from 500 to 1,000 lb. of coal to stop a train and start it again, depending on how long it stands, but often he cannot help it. Take the dispatcher into the family and give him the best tools to work with. Then get him to use his engines with the realization that they are very costly and very scarce and that every lump of coal is precious.

Scheduling freights is a great improvement. Send them out at specific times worked out to suit conditions and to keep the wheels turning, avoiding delays of all trains as much as possible.

Superintendent

Knowledge and thorough knowledge of his locomotives means more to this officer than to any other on the road, even those who are responsible for locomotives themselves. Under

his command are all those who use the power. When he has the traveling engineers he controls, and is in position to revolutionize locomotive handling and operation. He can control dispatching, control condition of power, direct firing and the use of locomotive cut-off. He more than any other officer can aid in making long locomotive runs and in providing equipment, men and supervision for locomotive maintenance and terminal attention. Superintendents also control the time lost at stations that must be made up by fast running that uses so much fuel. They are charged with fuel cost. They can do more than anyone else to save it.

In the superintendent the success of the divisional organization lies. Help him. Show him how the locomotive may help him.

Track Officers

Limitations of locomotive weight are sometimes arbitrary, but the tendency toward reducing dynamic augment, through lighter reciprocating parts, renders it possible to build even more powerful, more economical locomotives without requiring heavier rail and stronger bridges. Weight limits often prevent application of fuel saving improvements. The limit to locomotive capacity has not nearly been reached, but cooperation and understanding of this problem on the part of track people will be necessary. It will pay to relocate some water plugs, to change positions of some sidings for the sake of fuel. Improved acceleration of trains with a recent locomotive improvement has already affected these matters materially on a number of roads and will affect them much more. Track officers will find that locomotive improvements, other than light parts, will help them by avoiding the necessity for heavier rail and bridges. On the other hand they will find that they may do many things with track that affect fuel. They should interest themselves in what is happening to the locomotive, particularly as to application of the booster and reducing dynamic augment.

Signal Officers

These men know the cost of stopping trains. They are helping fuel by keeping trains moving. A new and vital problem lies before them. It will be up to them to secure the necessary safety from automatic train control without unnecessary stopping of trains. Get them into the fuel family as to the effect of this new development on the operation of trains of 60 to 100 cars and also as to the possible improvement of an occasional signal location. The possibility of increased acceleration of trains will affect these locations materially.

Mechanical Officers

When everybody else thinks of fuel, when the "business of owning locomotives" is understood and appreciated, when ultimate cost replaces "first cost" in the official mind, and when necessary improvements in accounting are made, mechanical officers will surprise everybody with the savings they will render possible. They will do it with modernized existing locomotives, with new and greatly improved locomotives, with competent maintenance, with tonnage ratings that mean maximum earnings. Their problem must be understood. They must have facilities, help, encouragement and support. They are ready, but they and their problems are not understood.

Condition of Power

A well known locomotive superintendent 15 years ago did a great thing to improve condition of power. He put several men in charge of matters that make or break fuel records.

1. Front ends, drafting engines for economy as well as for steam, air leaks into front ends and condition of superheaters. One man had charge of these.

2. Valve motion, best setting of valves for every class of engine and for every service was determined and it was this man's job to see that every engine on the road had economical and effective valve setting and that it was kept that way.

3. Boilers, this man was responsible for tight boilers, for clean flues and arch tubes, for grates, arches and ash pans.

4. Running gear, every box, pin, journal, shoe and wedge, was the responsibility of this expert. He supervised the shop and roundhouse work all over the road and had lubrication in charge.

These men had authority. At times they annoyed the master mechanics, but that was the reason for their appointment. Remarkable results were reported. Any road may do this. It means little in cost, but much in fuel. This is a good way to avoid fuel loss by leaky front ends, nozzles too small, leaky superheaters, fallen arches, leaky flues, hot boxes, knocking driving boxes and other things that defeat the best fuel efforts. Today, stokers, feed water heaters, grate shakers and power reverse gear would be added to the list, making it somebody's particular business to look after every one of them systematically.

Existing engines require this. As soon as the "bloom is off the peach" new ones need it also. Large capital expenditure is needed for the necessary maintenance facilities. The public has made it difficult for poor roads to raise the money, but a great deal may be accomplished by a gradual and relatively slow process, each step of which will make the next one easier. Get rid of the fatal monthly budget. Get to an annual basis. Consider annual cycles instead of straight line oversight. Do a little this year and invest the savings of this year for the time to come.

If our shops and roundhouses had adequate machinery and facilities for handling big work quickly, if they had enough to modernize all existing engines and to keep all engines up to condition there would be a surplus of power today for any load the roads have ever had to carry. This, however, will not provide for the load that is coming. New engines will be needed before they can be designed carefully to take advantage of available improvements, and before they can be built. But remember that the new ones will soon add to the shop load. There is no time to lose in this machinery matter or the loss to the public will bring the severest charges railroads ever faced. A new way for financing machinery additions must be found. This is now receiving attention with promise of success. Last February Secretary Hoover suggested government guarantees for improvements and equipment.

Engine Failures

Records for nine years on a well known road show 84 per cent reduction in the number of engine failures per month that cause a delay of five minutes, whether made up or not. Remember that time made up on the road is mighty costly in fuel and it should count against any failure that causes it. In the nine years referred to the number of engines dispatched per engine failure increased 251 per cent. Figuring on $250 as the average cost of an engine failure, and the cost may often reach five times that amount, this road estimates a saving of a quarter million dollars per year, and relatively it is a small road. An engine failure may cost $1,200 if it delays four or more trains. The particular failure that showed this figure could have been prevented by an expenditure of $25.

Long Locomotive Runs

Stand-by losses murder fuel records. Is yours as high as 30 per cent as it was recently stated to be on one big road? Popular demand for economies and growing public sentiment in favor of the operating economies of electrification have some foundation in view of the possible continuous service of electric locomotives eliminating stand-by losses Eight hours a day or perhaps half that, ought to be enough to condition a locomotive, leaving 16 or more, for service. It is not the fault of the engine that it does not work more

than 16 hours or that it spends more than half its life at rest. After 150 miles the engine is well warmed up for another 500 miles.

Individual Fuel Records

Without individual performance records it is impossible to check tonnage performance of engines, to check up the value of vitalizing factors and to know whether the power improvements and economy they should give is really produced. A combination of four vitalizing factors should give the light government Mikado 50 per cent additional pull at 30 miles per hour for the same coal as a plain engine of the same size would use. Do we get this power? Only individual records of fuel and tonnage will show. J. N. Clark covered this question admirably before the Pacific Railway Club last year. He asks how the traveling engineer is to know what to say to 125 engineers and 140 firemen unless he knows what each one is doing?

He also asks: "How long would a large industrial plant remain a going concern if they had one item of expense amounting to 40 per cent of their operating expenses and had no idea as to whether it was sustaining a loss each month due to lack of supervision over details?" W. L. Robinson covered this subject in his paper before the New England Railroad Club in December, 1917.

By a few simple figures every run may be made a test run. We do this with automobiles. Any deficiency in miles per gallon leads to a prompt investigation because it touches our own pocketbooks. Some tests made three years ago proved 20 per cent in fuel saving by an improvement on a big engine, but it did not show on any record except that of the test. When a new type of engine goes to work it is most important to know its operating and fuel standing as compared with those that it replaced. This would help in ordering the next new ones. Those who do not know cannot wonder why new engines are ordered without consultation with them. Some general office buildings have four and five floors of accountants. Is it not possible to divert a few accountants to the vital statistics needed for locomotive operation, to make every run a test run, even if it is a rough test?

Co-operation of Engine Men

The major number of engine men take pride in their work. Their co-operation is a vital matter. They are intelligent, able men, but don't ask them to save fuel while someone else who directs their work wastes it faster than they can save it. Give them a chance to run. Give them a railroad to run on, give them track, give them signals and water plugs where they ought to be. Then show them films such as the "Fuel Conservation," films of the Southern Pacific. They would co-operate and turn their daily routine to the advantage of the company. Are your engine men with you as to fuel? Have you a right to expect them to be? Do you keep records of individual tonnage and fuel so that the good men can make a showing and so that the others will be encouraged to try?

Stationary Power Plants

Over 1,200 railway power plants offer opportunities for a lot of fuel saving. Heat losses alone account for 25 per cent of the fuel in the average steam plant without referring specially to railroad plants. Do we give careful attention to the operation of shop power plants to see what the firemen are doing? Do we train and do we check up power plant engineers and firemen? Do we keep brickwork tight? Do we apply superheaters and do we cover piping and stop the leaks of steam, water and heat? A few years ago a large manufacturing company saved ten per cent of its fuel in a large plant by merely stopping leaks. What could railroads save by covering pipes, stopping leaks and by replacing old locomotive boilers by proper boilers with superheaters for stationary plants?

Boiler Water Treatment

A very costly encumbrance is boiler scale. Many a railroad is regularly using waters not fit to be put into boilers, locomotive boilers least of all. It costs little to "doctor" those bad waters, little compared with the cost of driving heat through boiler scale which is the most effective heat resister known. For the benefit of your fuel records "medicine" these bad waters.

Personnel

It's the personnel of an organization and the skill and spirit of its members, the team work, that gets the results, good or otherwise, out of any equipment—army, navy, manufacturing or railroad. Hand in hand must go improved men, improved supervision and improvements in material. To be ready for better locomotives it is necessary to lead men to bring the present equipment and its use to a point of high efficiency. Improve the men and when they get the best work out of present machinery they will be ready for better machinery. A suitable plan for recruiting, training and promotion of men—real apprenticeship—is the thing railroads need more than any other one thing today. What are you doing about this? Ask the roads that have systematically provided apprenticeship whether it pays. Ask the Santa Fe people. Only one road has applied this year to a certain famous technical school for some of its graduates. Was it your road?

Morale

Morale is the first thing to fix. Perhaps by inspired leadership this may be accomplished. Leaders always know what they want and how to get it. Everybody sees coal come in quantities by train loads. Is it not possible by leadership to induce everybody to use it as if it were their own?

Those Next New Locomotives

To order new engines now is a big responsible job which should be approached with full knowledge of the business possibilities of locomotives reinforced by experience and willingness to take advantage of everything that will produce efficient engines that will save money. There is little danger of going too far in refinement. There is great danger of perpetuating the brutal in present locomotive practice.

Unnecessary Weight

This is the first big thing to tackle. Many big engines today are doomed to carry literally tons of unnecessary weight, and to carry them for 20 or 30 years. Think of the fuel required to drag the heavier engine around. Many engines have been built recently that were too heavy to take important fuel saving factors. Here is where the fuel officer comes in on refinement of present brutal weights. He comes in again in saving of fuel by long locomotive runs to which refinement of design and better steels will contribute. One railroad has gotten down to less than 100 lb. of weight per horsepower. Is it your road? There must be a definite weight limit or your fuel records suffer.

Undoubtedly the new engines will have trailing wheels. Boosters add to capacity, produce quicker acceleration to speed, help over critical points on grades, clear yard ladder tracks in shorter time and really put a trailer type of engine into the next class above it in starting power. It saves fuel by avoiding doubling and by putting a light engine in position to do the work of a heavier one. You should consider building Atlantics today with boosters for suburban and frequent stop service, releasing heavier engines and make a little money on such trains.

Stokers should be considered for new engines in a new way—as fuel savers. They are generally advocated to throw more coal than a man can fire. They should be used as fuel savers, enabling the fireman to use his head when he is re-

lieved from the heavy work of firing. Power grate shakers reduce the starving of a fire for air. They are needed to make long runs and to facilitate cleaning fires. New engines call for most careful attention as to lubrication. Long runs already made prove this necessity. Heat conservation by feed water heaters will add to the power of the new engine or save fuel for the same power. Feed water heaters have been demonstrated to be a success and should be considered on every new engine.

All new engines have arches, but a new and double arch is available. Through its supporting tubes water equivalent to the entire contents of the boiler will circulate every seven or eight minutes when the engine is working hard. So also the thermic syphon is available. Their effect on combustion and also their influence on improved circulation must be considered. Boiler circulation may be accelerated in several ways. New engines with necessarily big boilers should have the fuel saving advantage provided by them. With improvements of this class circulation may be so rapid as to require steam separators to prevent the superheater from being compelled to evaporate water. This question will be answered soon. To help boiler circulation, reduce boiler repairs and reduce engine failures why not use ten or 12 inch mud rings?

No engines are built in these days without superheaters, but new ones should have the advantage of higher superheat and superheated steam for the auxiliaries which altogether use a lot of steam. This should save many a ton of fuel. This is now being worked out with promise of success.

Improved valve gears and power reverse gears are necessary on big engines. Cut-off control is only now becoming appreciated as a fuel saver and power increaser. The power

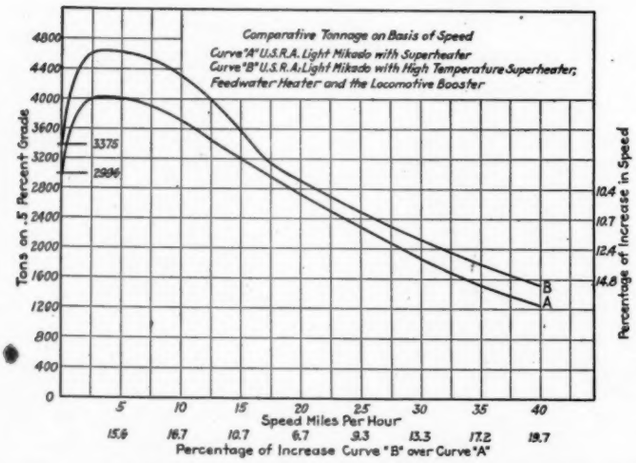


Fig. 1—Effect of Fuel-Saving Appliances on Tonnage and Speed

Curve A indicates the maximum tonnage which can be moved on a 0.5 per cent grade by the U. S. R. A. light Mikado at various speeds; while Curve B represents the possible increase in tonnage which may be obtained by equipping this locomotive with a feedwater heater, high temperature superheater and the locomotive booster.

The increased capacity, as shown by curve B, may be utilized in increased speed of operation, as indicated on the right margin of the diagram; for instance, the speed of a 1,600-ton train may be increased 14.8 per cent.

reverse gear that is to do the work on future big engines must be able to run for long periods without attention and without creeping. Such a gear is now available. For very powerful freight engines the 50 per cent maximum cut-off which has been so successful on the Pennsylvania should be taken into consideration, and after that comes the three cylinder engine to bring bearing pressures down.

This is not by any means a complete list. Skillful combination of design using these factors and others will produce locomotives that will surprise everybody. Up to the time this is written the locomotive that uses all of these, combined with skillful detail design, unrestricted as to first cost, but constructed for ultimate cost and operating economy, has not been built.

A Prediction

We think we know the locomotive. We do not. We will not until a certain thing is done that has never yet been done. Put this up right and you will get it.

Give an order to one of the three locomotive builders, or better give one to each of them, such an order as you give to electric locomotive builders. Give an order for a new locomotive for certain traffic on your road. Make no limit on price, but order the most economical engine that can be built for that work, all things considered, ton-miles per hour, per ton of locomotive metal, per dollar of locomotive maintenance and per dollar of track maintenance cost. Enlist the leaders and best engineering talent of the solid, reliable, reputable companies producing the vitalizing, capacity increasing and fuel saving factors that render the modern locomotive possible. Tell all hands, without exception, to cut out every pound of unnecessary weight and make every one of them do it. They will do wonders in this direction when they must. They have never yet been made to do it. But the builders can do more than all the rest. In all things insist on efficiency. Use alloy steels whenever possible, but do not take a chance on anything that has not abundantly made good. Above all things insist on quality material everywhere and get it, as you do when ordering electric locomotives.

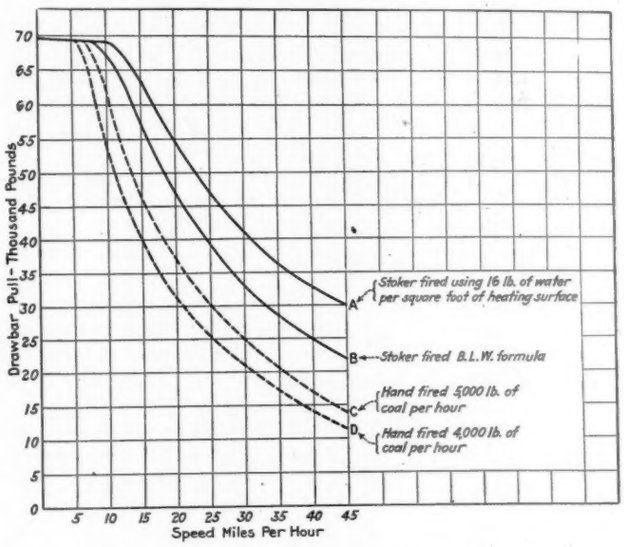

Drawbar Pull - Thousand Pounds
Speed Miles Per Hour
Stoker fired using 16 lb. of water per square foot of heating surface
Stoker fired B.L.W. formula
Hand fired 5,000 lb. of coal per hour
Hand fired 4,000 lb. of coal per hour
A
B
C
D

Fig. 2—How Stokers Increase Tractive Effort of Large Locomotives

The capacity of a fireman is limited to about 4,000 lb. of coal per hour over considerable periods; for short periods a man can fire at the rate of from 5,000 to 6,000 lb. per hour.

Curves D and C indicate the drawbar pull on level straight track that can be expected from the U. S. R. A. heavy Santa Fe type locomotive with hand-firing at the rate of 4,000 and 5,000 lb. per hour, respectively.

Curve B illustrates the normal output in drawbar pull of this locomotive as rated by the builders when it is equipped with a mechanical stoker; this involves an evaporation of from 12 to 13 lb. of water per square foot of heating surface and fuel consumption of about 120 lb. per square foot of grate per hour.

Curve A indicates the increase in drawbar pull over the normal capacity which may be expected when the boiler is forced to about 20 per cent beyond its normal capacity.

It will thus be seen that in emergency the stoker can be used to increase the locomotive capacity, although it should be borne in mind that such increase is obtained at a loss in efficiency.

When this engine is delivered take good care of it, but make it work every possible minute as every machine should work. Put an experienced man on the job of following the engine to see that it has a "show," as the electrical people do when they install electric locomotives. Then see to it that operation is made to fit the locomotives *as the electric loco-*

motive people do and thereby correct a lot of faults that steam locomotives have always had to endure. Keep track of the tons of freight, fuel, water and the time. Get the dispatcher to give the locomotive the rails to run on, show the men how to run it and then give the right amount of thought to its maintenance.

Then tell the chief executive the results in money saved. He will tell the "Board" the same day. That day will begin a new kind of money making railroading.

Some new, quick, deep, intensive thinking on the locomotive is needed and needed now.

This is an effort to interest real railroad men in some things they are overlooking. It is a challenge for the short-sighted gentry who refer to important locomotive improvements slightingly.

Look, think, act. When you build new engines build ten that will do the work of 20 old ones and cost less to keep up.

Who orders new engines on your road? When he orders two million dollars' worth of engines get him to see how much efficiency he can buy instead of how many engines he can get for his money without regard to their efficiency.

[Accompanying Mr. Basford's paper were numerous charts showing the effect of fuel-saving devices on tractive effort, tonnage, speed, fuel and water rates and acceleration. Two of these charts are reproduced in this abstract.—EDITOR.]

Discussion

H. C. Woodridge (Locomotive Stoker Company), said that fuel economy must be considered in connection with other operating costs as well as with considerations of revenue, calling attention to the fact that while stokers have not generally shown as good an evaporate efficiency as hand firing, they have actually reduced ton-mile fuel costs. Recent tests, however, have demonstrated that the stoker can actually increase the evaporation per pound of coal over that obtainable under comparable conditions by hand firing.

Statistics Show Increase in Timber Preservation

ALMOST HALF of the crossties now purchased by the railroads of the United States are subjected to preservative treatment before insertion in the track. This is the most important fact to be gleaned from the statistics on timber preservation in the United States for 1921, prepared by the United States Forest Products Service in co-operation with the American Wood Preservers' Association. The number of crossties treated in 1921 was 55,383,515 ties as compared with 44,987,532 in 1920, the previous maximum record. It is interesting to note that in spite of this marked increase in the treatment of railroad ties there was a decrease in the treatment of timber used for other purposes. Thus, expressed in cubic feet, there was an increase in the treatment of ties to the extent of 31,188,000 cu. ft., whereas the increase in the treatment of all timber was only 28,334,000 cu. ft.

Excluding ties there were only two classes of material in which there was any increase in the volume of timber treated,

CUBIC FEET OF TIMBERS OF VARIOUS CLASSES TREATED IN 1920 AND 1921

Classes	1920	1921
Crossties	134,962,596	166,150,545
Piles	8,092,546	5,581,999
Poles	10,309,746	10,959,256
Wood blocks	6,741,410	6,202,904
Crossarms	318,707	108,715
Construction timber	11,645,811	11,876,708
Miscellaneous lumber	1,238,689	753,101
Total material treated	173,309,505	201,643,228

namely, poles and construction timbers, and in each of these cases the increase was nominal. This comparison can be checked rapidly from an examination of the table showing the quantities of timbers subjected to treatment in 1920 and 1921, subdivided between crossties, piles, poles, wood blocks, crossarms, construction timber and miscellaneous lumber. A broader view of the growth of timber preservation is to be had from the larger table showing the quantities of timber treated and the consumption of the two principal preservative materials from 1909 to 1921, inclusive. Further evidence of the growth of the industry is to be had from the fact that 122 plants were in active operation during 1921, or 10 more than in the previous year.

In the preservation of wood in the United States in 1921 the treating plants consumed 76,513,279 gal. of creosote, 1,060,753 gal. of paving oil, 1,810,294 gal. of miscellaneous preservatives and 51,375,360 lb. of fused zinc chloride. The zinc chloride consumption in 1921 was the largest so far reported by the industry and represents an increase of 1,657,431 lb. over the quantity used the year before.

The quantity of creosote used during the year constitutes an increase of 7,755,771 gal. over that consumed in 1920, while the 1,060,753 gal. of paving oil reported was less by 788,158 gal. than the 1920 consumption. The quantity of miscellaneous preservatives used in 1921 was greater by 38,210 gal. than in the year previous. The restoration of the foreign creosote industry to its pre-war status is indicated by the large increase in the consumption of foreign oil, which amounted to 28,242,307 gal. in 1921 as compared with 9,575,680 gal. in 1920. However, although the quantity of domestic oil used in 1921 was less than in 1920, it is still considerably larger than the volume of imported oil.

WOOD PRESERVATION 1909-1921, TOGETHER WITH CONSUMPTION OF CREOSOTE AND ZINC CHLORIDE

Year	Total Material treated, cubic feet	Number of crossties treated	Creosote used, gallons	Zinc chloride used, pounds
1909	75,946,419	20,693,012	51,426,212	16,215,107
1910	100,074,144	26,155,677	63,266,271	16,802,532
1911	111,524,563	28,394,140	73,027,335	16,359,797
1912	125,931,056	32,394,336	83,666,490	20,751,711
1913	153,613,888	40,260,416	108,378,359	26,466,803
1914	159,582,639	43,846,987	79,334,606	27,212,259
1915	140,858,963	37,085,585	80,859,442	33,269,604
1916	150.522,982	37,469,368	90,404,749	26,746,577
1917	137,338,586	33,459,470	75,541,737	26,444,689
1918	122,612,890	30,609,209	52,776,386	31,101,111
1919	146,060,994	37,567,927	65,556,247	43,483,134
1920	173,309,505	44,987,532	68,757,508	49,717,929
1921	201,643,228	55,383,515	76,513,279	51,375,360

The consumption of domestic creosote aggregated 48,270,972 gal. in 1921, a decrease from quantities slightly in excess of 59 million gal. each for 1919 and 1920.

Of the total number of crossties treated during 1921, 35,819,931 were hewed and 19,563,584 were sawed. The crossties treated in the largest quantity were yellow pine, the total number reported being 21,511,719. Oak ties ranked second with 12,838,157 and Douglas fir ties were third with 4,960,115. Other ties treated in any quantity were western pine, beech, gum, tamarack, maple, birch, elm and hemlock.

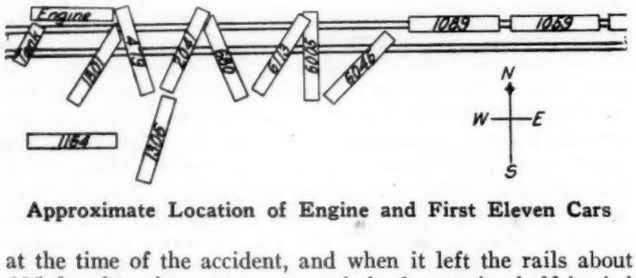
A total of 22,046,466 crossties were treated with creosote in 1921 and 30,265,947 with zinc chloride. The number of ties impregnated with the zinc-creosote emulsion was 3,061,234, while 9,868 were subjected to treatment with miscellaneous preservatives. In treating ties with creosote an average absorption of 7.21 lb. per cu. ft. was obtained. Where zinc chloride was used the average quantity of preservative that was forced into the wood was 0.48 lb. per cu. ft. With the use of the zinc-creosote emulsion the injection amounted to 0.49 lb. of zinc and 2.75 lb. of creosote. Practically all of the wood-preserving processes used commercially were employed in the treatment of crossties.

THE ANNUAL CONVENTION of the Chief Interchange Car Inspectors' and Car Foremen's Association which was to have taken place at Chicago, August 22-24, has been postponed and will be held at the Hotel Sherman, Chicago, November 6-8.

Michigan Central Express Wrecked by Removal of Track Spikes

MICHIGAN CENTRAL westbound train No. 39, a New York-Chicago express due to arrive at Chicago at 9:45 p. m. Saturday, August 19, consisting of 22 express cars and a coach, was derailed and wrecked 1¼ miles east of Gary, Ind., at 2:18 a. m. Sunday, August 20. The accident was caused by some unknown person or persons maliciously pulling 27 or more spikes from the outside of the south rail on the westbound main track. The engineman and fireman were buried under the engine and killed and two express messengers were injured.

The train was running approximately 45 miles an hour



Approximate Location of Engine and First Eleven Cars

at the time of the accident, and when it left the rails about 395 ft. of track was torn up and the locomotive half buried itself in the sand. After the engine turned over, the first car went nearly 200 ft. beyond it before going into the ditch. Four additional cars were derailed. The line, which is double track, passes through the sand dunes of Indiana and is tangent within the range of vision from the point of the accident.

Soon after the accident, James H. Connelly acting captain

International Newsreel Photo

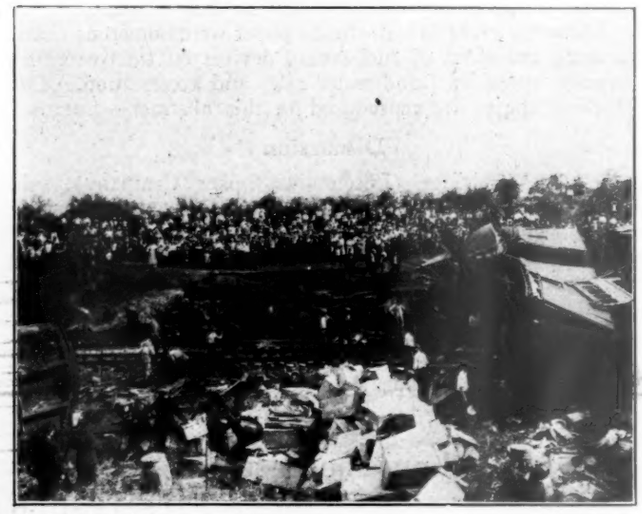
View from the South East

of police of Gary and P. E. Pfeifer division superintendent of the Michigan Central, in investigating the cause of the accident, found that at least 27 spikes had been removed from the ties, the track being so badly torn up that it was impossible to determine how many more had been taken out.

The marks of the claw bar were plainly visible on the spikes and its impression on the ties was very clearly indicated. The first two cars which remained upright (the trucks only being derailed), stood at the point where the spikes had first been removed, and three ties were found to have spikes in them, although from their appearance, attempts had been made to remove them, as they were raised slightly.

The last passenger train westbound prior to the accident was No. 23 from Buffalo, N. Y., which was due at Gary at 8:00 p. m. Saturday. Westbound freight extra 7878 passed Garry at 12:38 a. m. No. 45, another passenger train from Buffalo, was due at Gary at 5:22 a. m. while No. 47, a train from Grand Rapids Mich., was due at 6:10 a. m. From the fact that extra 7878 passed the point of the accident at 12:38 a. m. and the accident occurred at 2:18 a. m., it appears that the spikes were removed some time during the one hour and forty minutes intervening between the time the extra left Gary and the time No. 39 arrived. From the investigation it appeared that after the spikes were removed the rail had been thrown out slightly to spread the gage.

At the inquest, which was held at Gary on August 21, the coroner stated that the wreck was the result of a deliberate



"P. & A. Photo"

Overturned Engine; the Tender Has Been Removed

plot, recording the deaths of the engineman and fireman as homicide. The verdict of the coroner's jury was that "The wreck was deliberately planned by a person or persons unknown and therefore the deaths were homicide." This verdict was reached after several witnesses had testified that a number of spikes had been pulled from the outside of the rail, which resulted in their spreading as the express train passed. The coroner's investigation developed the fact that no engine trouble had been experienced although such reports had been circulated.

J. P. Rooney, head of the bureau of investigation of the Department of Justice in Chicago, acting under instructions from Attorney General Daugherty at Washington, began a federal investigation of the causes of the wreck. In addition, Indiana state officials, railroad officers and other agencies are carrying on investigations. Operatives of states attorney Crowe of Illinois, raided the offices of William Z. Foster of the Trades Union Educational League after the accident to determine whether he was implicated directly or indirectly with the accident as he has been reported as being active in disseminating "red" propaganda among striking railway workers. However, the states attorney dropped his investigation after he learned that W. Z. Foster had been under such close surveillance by government agents during the rail strike and that it was almost impossible for him to have had any direct part in this occurrence.

Guard Against Physically Unsound Employees

Greatly Increased Liability of Railroads Under Present Laws Demands More Perfect Health Control

By John Leeming, M. D.
Medical Counsel, Chicago Surface Lines, and Consulting Physician, Chicago, Burlington & Quincy, Chicago

DO RAILROAD COMPANIES fully realize the risk they assume in the employment of their help? My experience leads me to believe that in the light of recent legislation this subject has not been sufficiently studied, nor its far-reaching effects fully comprehended. I submit the broad general statement that a railroad company should employ men only who are physically and mentally 100 per cent sound. No employer of labor will deny that efficiency depends largely upon a sound mind and a sound body, but desirable as efficiency may be, there are other reasons why perfect health is necessary in the workmen from the track worker to the locomotive engineer. A man in perfect health is more valuable to himself and his family and better able to render efficient service to his employer. Good health favors contentment, both individually and collectively, but when the subject is considered in the light of the various workmen's compensation acts, physical soundness is not only desirable, but as a matter of protection to the employer, a necessity.

Previous Health of Employee No Defense to Employer

The principle which underlies legislation of this character is that the employment in which the workman has been disabled owes him a living if the disability is due to an injury arising out of and in the course of the employment. A large number of cases which have caused endless trouble, litigation and great expense to the employer have proven to be cases where prior conditions of health had a serious bearing upon the question of compensation. There are any number of illustrations of a workman being employed with certain defects which are not absolutely disqualifying for service, but which, under the influence of an accident, may develop into a total and permanent disability. It appears to be well established in most jurisdictions that if a man is employed with certain latent or minor defects which are not in themselves disabling, and he suffers an accident "arising out of and in the course of his employment" and this accident so aggravates his prior condition that he is disabled, he is entitled to compensation notwithstanding the previous defect.

In Illinois it seems to be settled that so far as pre-existing disease is concerned, if the disease is aggravated or accelerated by an accidental injury in the course of the employment, an award will be predicated upon the effect of the injury upon the particular employee in his condition of health as it existed at the time of the injury (279 Ill., 235). The presence of a pre-existing disease is not of itself the basis of an award. "It is because of the injury acting as a cause of disability or aggravation of the disease, rendering the disability greater that makes compensation payable for the condition as it exists by reason of the injury." (Centralia Coal Co. vs. Industrial Commission, 301 Ill. 318).

The practical and important question which, therefore, presents itself to all employers of labor who are operating under the terms of workmen's compensation acts is: What latent or other defects are disqualifying, first, for competent and efficient service, and second, in anticipation of possible accidents occurring during and growing out of the employment. There should be no grading in selecting employees so far as physical health is concerned. All workmen should be 100 per cent sound, as determined by a competent medical examiner. A life insurance company will not accept a risk on any other basis and as railway companies, under the industrial laws, have to assume important risks, they should in self protection act on the same basis.

Railroad Protection Lies in More Thorough Examination

The important question which, therefore, presents itself, as indicated above, is to determine first by physical examination the positively disqualifying defects which will interfere with the worker's efficiency. This phase of the subject requires very little comment because the employment man in any large organization if instructed to do so could easily determine objectively the existence of the well recognized defects, such as, color blindness and other visual defects, impaired hearing, structural heart disease, pulmonary or bone tuberculosis, palpable deformity, organic diseases of the nervous system, over-weight, under-size and weight, etc.

The second phase of the subject, however, is one upon which I desire to direct special attention for the reason that it is one which in my experience and observation has been very much neglected in the past, and also because the disqualifications are of a character that are much more difficult to detect. I refer to what I have termed latent defects and the existence of certain blood diseases which do not manifest themselves to an ordinary or casual medical examination. Such underlying conditions, by a comparatively slight injury, may be so aggravated or roused up as to constitute a prolonged or even permanent disability. This opens up a big field and to go into the subject in any sort of detail, would carry one entirely beyond the permissible space of this article. A few suggestions will indicate the writer's trend of thought and should be entirely sufficient to lead an interested reader along the lines of study suggested.

Look for Latent as Well as Obvious Defects

What defects, inherited weaknesses, predispositions, constitutional states, etc., should be looked for in the thorough medical examination I am advocating? What underlying conditions might exist without exhibiting marked objective or apparent evidence that could be roused up by injury into a serious trouble resulting in prolonged disability, or possibly a fatal termination? Constituting one such condition, there is hernia. Many men are ruptured. Authorities are sponsors for the statement that one in every 25 male adults is affected in this way. Such ruptures are usually of long-standing and in most cases when properly supported are not disabling. Wherever located, an accident accompanied by an involuntary muscular movement in an effort to save one's self from falling, may so operate to bring about an acute and complete hernia, with possible disastrous results and prolonged incapacity for work.

As a second consideration there are the varicose veins of the legs, a condition which is not unusual in men. Neither is it disqualifying for work if the affected limb is properly supported. But if a workman with this defect sustains an abrasion or bruise in the region of his diseased veins they are very likely to become ruptured and a condition arise which results in a prolonged if not a permanent disability.

The condition indicated by high blood pressure is a third defect to be considered among these latent defects. In the physical examination of every applicant for service, the blood pressure should be taken and if it is more than "100 plus the man's age," a close investigation should be made to ascertain its cause and if the cause cannot be discovered and the condition remedied, the employment of such an applicant is a dangerous risk for the employer to assume.

There is a fourth class of defects to be considered in those disorders known as "Focal Infections." It refers to the presence in certain cavities of the body, of infectious or poisonous material which, not readily remedied by natural processes, is absorbed into the circulation, with the result frequently, of setting up inflammatory action in the muscles, joints, bones and other important structures. The follicles of the tonsils, root cavities of the teeth and the sinuses connected with the upper air passages are the most common sites of such infection and thousands of cases of chronic rheumatism, persistent neuralgia and other painful and disabling troubles have been permanently cured by the discovery and removal of such real underlying causes. Many apparently able-bodied men are, without their knowledge, carrying about with them some of these undiscovered foci of infection. Their general good health has enabled their systems to develop an immunity against this poison, but let such an individual sustain an injury to a joint, a sprain of his back, a bruise over some nerve, and the lowered resistance thus induced by the injury favors the development of a condition which will persist and disable until the real cause of the trouble is removed.

Venereal disease is another of these latent defects which invite serious consideration by railroads. The public would be appalled if it knew the prevalence of certain forms of such disease that prevail in many apparently healthy individuals. In fact, many such individuals do not know it themselves, and in such cases an injury, especially to bones, or joints, or the covering of bones where this underlying taint is present, proves to be disabling in the form of inflammation of the bone covering, etc., until a course of specific "blood treatment" is used.

Tubercular tendency is a sixth of the conditions to which I refer, a condition which is common but difficult to detect. It requires careful investigation. Many cases of tuberculosis of the knee joint, hip joint, spinal column and other parts of the body have been attributed to comparatively slight injuries to the parts involved which, owing to the underlying predisposition, were unable to survive the effects of the injury and a permanent disability has thereby ensued.

Finally there should be considered functional heart affections and functional nervous states. A rapid pulse, the evidence of an irritable heart, is very common in many otherwise healthy individuals from a variety of causes such as excessive use of tobacco, disturbances of gland secretion, prolonged indiscretion in diet, etc., in the presence of which the power of resistance against injury and the ability to recuperate following injury is materially impaired. Functional nervous state is a condition, which is either inherited or acquired and calls for careful attention. A plaintiff's expert once said, in reference to a case of this type: "Such an individual is a very bad one to receive an injury." These are the cases which fill our court calendars with the so-called traumatic neurasthenias and traumatic hysterias and in which employees after a trivial injury develop persistent, disabling and long continued neuroses, for which the employer is held liable under compensation acts.

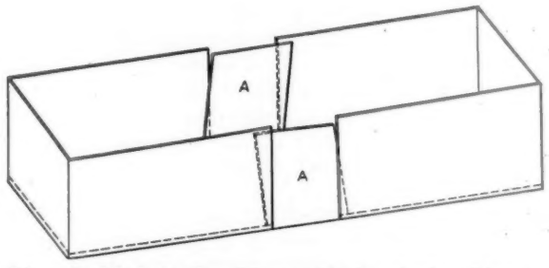
Life Insurance Methods None Too Complete

These suggestions show the position in which the employer of labor finds himself if he has men working for him who have these and other quiescent or latent defects. Failing to take the necessary steps to ascertain the fitness and capacity of the employee, he therefore assumes the increased risk under the compensation acts of employing or retaining men, who under the influence of a trivial accident may be disabled for months or years. Such men are undoubtedly bad cases to suffer from accidental injury "arising out of and in the course of" their employment, and while the suggestions indicated could be greatly elaborated and much of a similar character added in reference to other underlying defects, enough has been said to justify the statement made at the outset that in the employment of men in all branches of labor connected with railroad work, a thorough, complete and exhaustive examination is requisite—just as complete and thorough as that required by a life insurance company. The employment man of a railroad company would do well to have printed in large type for his guidance the recent opinion of an arbitrator that "This man's prior trouble was no doubt aggravated by the accident in question and his disability is no doubt due to such aggravation—the employer either knew of the pre-existing condition when the man was hired or it was his business to have discovered it."

A New Design of Liner for Grain Cars

LEAKAGE OF GRAIN from defective cars is a serious source of loss to the railroads. All roads endeavor to make equipment offered for grain loading as tight as possible, and a considerable proportion of the cars are lined with paper or burlap. Formerly, paper for lining cars was furnished in rolls, but this method of coopering is slow and expensive and prepared linings shaped to fit the floors, sides and ends of the cars have come into use in recent years.

An improved car liner of this type has recently been placed on the market by E. C. Unser, River Edge, N. J. The principal features of this liner are the one-piece construction and the simplicity of application. The complete liner is made in two sizes, 40 and 50 ft. long, which will fit any length of car. It is furnished so that it can be



The Liner Is Made in One Piece with Overlaping Flaps at the Doors

placed on the floor of the car and rolled out lengthwise, the sides being then lifted and fastened against the walls of the car. The operation of lining a car can be completed in a few minutes.

The two standard sizes of liners are adapted to the varying widths and lengths of cars by folding either longitudinally or transversely to fit the inside dimensions of the body. Special provisions are made in this liner for loading and unloading. Two separate sections, AA, at each doorway overlap the sides. When loading the ends of the car one doorway can be closed while the door covering on the side from which the car is loaded is folded out of the way and gradually raised as the level of the load rises and the grain doors are put in place.

These liners are made of heavy kraft paper and are suitable for protecting loads of sugar, salt, lime, paper, flour and other mill products as well as grain.

General News Department

The Central Railway Club, announces that the September meeting of the club has been postponed until further notice.

W. R. Rowe has been appointed general traffic manager of the Automotive Equipment Association, with headquarters at Chicago.

The Southern Hardwood Traffic Association has opened district offices in the Conway building, Chicago, in charge of W. E. Wherity, district manager.

The Atchison, Topeka & Santa Fe loaded 6,831 cars of revenue freight on August 22, an increase of 239 cars over the best previous record on October 25, 1921,

H. R. Gillespie has been appointed traffic manager of the Moore Refining Company, with headquarters in Chicago. This company has bought the properties of the Milliken Refining Company at Arkansas City, Kan.

The bill authorizing the Interstate Commerce Commission to require railroads to issue interchangeable mileage book tickets and scrip books and to fix the rate per mile and the denomination, became a law on August 18 by the signature of President Harding.

Arthur S. Tuttle has been appointed chief engineer of the Brooklyn-Richmond freight and passenger submarine tunnel to be built by the City of New York. H. H. Smith has been appointed deputy chief engineer on the same project. Some of the other engineering appointees are D. W. Coe, W. J. Shea, F. H. Phipps, J. B. Snow, C. D. Drew, W. M. Griffin, C. K. Conard, W. C. Lancaster and J. H. Quimby.

The Traffic Club of Atlanta, Ga., has re-elected the following officers: president, G. E. Boulineau, general freight agent, Georgia, and Atlanta & West Point; vice-president, J. W. White, traffic manager International Agricultural Chemical Corporation; second vice-president, S. Linthincum, traffic manager, Empire Cotton Oil Company; and secretary-treasurer, S. W. Willson, southern freight agent, Philadelphia & Reading.

The Chicago Chapter of the American Association of Engineers will start a class in railroad management on September 11. This course is designed to inform the student regarding the work of the station agent, yardmaster, trainmaster, superintendent, section foreman, master carpenter, roadmaster and division engineer. This is a repetition of a course which was conducted last year in which about 20 members of the association were enrolled.

Coal Loaded on Monday last, August 21, amounted to 19,043 cars. This statement, supplementing that of the Geological Survey, printed elsewhere, comes from the Association of Railway Executives. This total is 3,321 cars more than on Monday the 14th. Reports received by the Car Service Division show that the increase in loadings was due principally to a resumption of mining in the Ohio bituminous fields resulting from the agreement recently reached at Cleveland.

The Pennsylvania Railroad reports that between August 5 and August 9 it transferred 75,000 bushels of wheat from an elevator in Buffalo to a ship in the Delaware River within 72 hours. On Saturday afternoon the wheat was in the elevator at Buffalo. That evening it was loaded into 47 freight cars (48 tons to the car), which were made up into a solid train (about 3,500 tons). The train left Buffalo Sunday morning, and reached the Girard Point elevator, Philadelphia, late Monday afternoon. The grain inspectors worked all night, and at 7 o'clock Tuesday morning the work of loading the grain into barges, to be floated up to the I. M. M. steamer Maryland, at Pier No. 53, was started. The first barge left at 10 a. m. By Tuesday evening—exactly 72 hours after the loading of the cars in Buffalo—the entire cargo was aboard ship, ready for sailing. In that time the grain had been handled through four elevator operations and had made a journey of 416 miles by rail.

International Railway Congress

The Permanent Commission of the International Railway Association has announced that the next congress will be held in London during the latter half of 1925. This time is selected in order to participate in the centenary of the first English railway. The questions to be discussed will be limited to three for each of the five sections; way and works, locomotives and rolling stock operation, general, and light railways.

A. S. C. E. Fall Meeting at San Francisco

The American Society of Civil Engineers will hold its fall meeting at San Francisco, Cal., on October 4 to 9, inclusive, with headquarters at the Palace hotel. The program will be devoted to the consideration of the water power problem with technical meetings on Wednesday and Thursday, October 4 and 5 and with an excursion to Don Pedro, Hetch Hetchy, and the Yosemite Valley on October 6-9. Arrangements have been made for special cars to leave Chicago on the Overland Limited of the Chicago & North Western on Saturday evening, September 30.

Coal Production

Coal production during the week of August 14-19 from the mines that were already working is estimated by the Geological Survey about 4,300,000 tons. It was said to be unlikely that the union mines reopening in Ohio and elsewhere will raise the total output for the week much above the 4,576,000 tons produced the week before. For while mines long closed by the strike are reopening there was a recurrence of acute railroad disability in certain of the non-union and open shop fields. Loadings on Monday, August 14, according to the railroads, were 15,722 cars, a decrease of 3 per cent as compared with the week preceding. Thereafter they declined steadily to 12,530 cars on Wednesday. The loadings on Thursday, 13,463 cars, gave the first indication of shipments from mines reopened under the Cleveland agreement.

Car supply improved in certain districts of Southern West Virginia and Kentucky, but in Harlan County and adjacent fields of Southeastern Kentucky and Tennessee, transportation was for a time almost completely blocked. Western Kentucky also reported acute transportation loss.

There was no compensating increase in shipments from the non-union fields of Pennsylvania.

Final returns show production of all coal in the nineteenth week of the strike as 4,605,000 tons including 29,000 tons of anthracite. In the corresponding week of 1921 the output of bituminous was 7,770,000 tons and of anthracite, 1,770,000 tons, a total for all coal raised of 9,540,000 tons; the year before that the total was 12,280,000 tons. Considering anthracite and bituminous coal as a common source of supply, the present weekly output is five or six million tons below normal.

The mine reports confirm previous statements that the increase in production in the week ended August 5 was due largely to improvement in transportation. Losses in Colorado ascribed to transportation were practically confined to the railroad that recently resumed service after a suspension of several weeks.

The mine operators' statements show conclusively that the gradual increase in production was not due to the opening of mines in the strongly unionized districts, but rather to improved car and labor supply in the non-union and partly organized fields.

Operating Statistics of Large Steam Roads—Selected Items for the Month of June, 1922,

Region, road and year	Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross, Excluding locomotive and tender	Ton-miles (thousands): Net, Revenue and non-revenue	Average number of locomotives on line daily: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:												
Boston & Albany.....1922	394	229,134	245,001	24,951	4,897	69.0	235,136	83,705	113	29	20.6	...
1921	394	243,687	262,603	29,513	4,366	63.6	235,293	91,918	122	29	19.1	...
Boston & Maine.....1922	2,455	487,160	543,358	44,164	11,484	73.4	536,459	208,655	323	122	27.5	47
1921	2,469	507,466	560,399	46,723	10,703	68.8	560,236	231,969	343	118	25.6	73
N. Y., N. H. & H.....1922	1,959	430,932	471,156	28,811	11,623	71.7	536,951	205,110	284	73	20.4	39
1921	1,959	450,721	489,181	32,891	10,549	66.1	554,936	234,691	303	85	22.0	39
Great Lakes Region:												
Delaware & Hudson.....1922	887	231,699	313,571	30,428	6,500	69.0	358,335	160,964	287	29	9.3	178
1921	880	337,717	432,930	41,002	8,222	59.4	560,818	273,600	295	20	6.3	136
Del., Lack. & Western....1922	994	432,729	520,779	88,251	13,738	70.7	672,889	269,911	305	56	15.6	67
1921	995	493,782	600,315	111,451	14,851	67.0	839,641	390,098	362	57	15.9	47
Erie (inc. Chic. & Erie)...1922	2,309	776,112	855,677	57,602	25,813	64.9	1,445,047	602,624	534	227	29.8	98
1921	2,259	798,111	896,281	44,677	25,844	66.2	1,519,271	687,324	547	150	21.6	122
Lehigh Valley 1922	1,316	485,582	543,571	81,178	14,677	67.8	803,161	352,103	460	102	18.2	201
1921	1,316	519,626	576,703	58,448	14,733	62.6	913,309	428,826	420	121	22.4	135
Michigan Central 1922	1,827	491,998	501,469	19,060	16,251	66.9	833,704	321,978	315	89	22.1	91
1921	1,829	424,612	435,499	16,667	12,563	61.5	696,981	262,361	331	87	20.8	87
New York Central 1922	5,675	1,551,849	1,719,323	97,899	58,602	67.9	3,084,911	1,241,762	1,043	552	34.6	368
1921	5,655	1,566,482	1,720,706	116,663	52,824	61.3	3,139,553	1,323,307	1,005	618	38.1	306
N. Y., Chic. & St. L.....1922	510	344,281	345,011	1,120	11,301	68.4	560,571	212,044	106	34	24.0	30
1921	510	308,558	309,634	364	9,506	65.3	490,385	183,133	113	52	31.4	41
Pere Marquette 1922	2,812	306,848	316,112	5,718	7,884	68.5	414,459	181,264	172	38	18.2	20
1921	2,196	293,815	301,167	6,256	6,954	65.3	380,686	171,777	166	40	19.4	21
Pitts. & Lake Erie.....1922	228	87,331	90,090	597	2,669	66.7	172,918	97,474	64	20	23.6	19
1921	225	70,171	79,810	392	2,288	64.2	159,505	93,159	62	23	26.8	20
Wabash 1922	2,418	564,580	596,425	4,875	16,562	72.2	824,103	340,888	281	59	17.4	41
1921	2,418	471,334	499,738	6,769	13,764	68.8	720,151	301,129	279	69	19.8	53
Ohio-Indiana-Allegheny Region:												
Baltimore & Ohio.....1922	5,235	1,687,025	1,944,047	153,234	44,069	67.0	2,607,250	1,283,087	967	353	26.7	175
1921	5,185	1,654,036	1,911,405	134,123	39,828	59.2	2,637,723	1,312,635	991	424	30.0	150
Central R. R. of N. J.....1922	689	227,506	250,417	32,153	4,822	66.9	266,756	119,712	230	29	11.3	58
1921	679	253,506	283,737	37,615	5,599	59.2	377,401	183,385	200	62	23.7	15
Chicago & Eastern Ill.....1922	945	228,409	238,285	2,624	5,636	62.2	313,251	140,317	123	38	23.8	40
1921	1,131	209,042	210,002	2,464	4,719	62.3	280,946	134,708	125	46	26.7	52
C., C. C. & St. L.....1922	2,383	676,322	725,639	11,845	21,063	62.7	1,279,072	595,158	295	151	33.9	6
1921	2,382	582,206	607,679	2,245	15,272	56.3	971,405	399,845	307	140	31.4	39
Elgin, Joliet & Eastern....1922	459	93,321	104,366	5,970	2,865	67.0	202,699	107,451	87	20	18.4	21
1921	456	76,599	82,825	4,589	2,273	65.8	165,811	86,793	98	10	9.3	36
Long Island 1922	394	41,981	43,837	8,056	464	58.4	26,425	9,066	36	8	18.6	1
1921	395	40,669	46,869	7,780	447	57.8	25,942	9,701	35	7	16.5	4
Pennsylvania System 1922	10,902	4,025,405	4,282,811	269,764	108,085	66.2	6,498,957	2,987,661	2,644	765	22.4	726
1921	10,893	3,913,626	4,245,353	301,078	101,222	61.3	6,980,607	3,451,651	2,638	794	23.1	849
Phila. & Reading.....1922	1,119	463,687	500,995	50,130	10,746	65.7	663,639	328,025	395	73	15.7	232
1921	1,119	499,605	563,379	69,715	12,139	61.7	829,446	429,439	376	81	17.6	167
Pocahontas Region:												
Chesapeake & Ohio.....1922	2,548	814,100	884,582	20,359	26,092	59.1	2,024,131	1,113,960	445	98	18.1	43
1921	2,545	830,054	895,530	25,115	24,215	55.9	1,971,182	1,072,786	441	114	20.5	35
Norfolk & Western.....1922	2,228	1,022,663	1,271,000	54,841	29,107	57.1	2,376,028	1,289,796	620	92	13.0	134
1921	2,210	754,457	897,846	36,431	21,281	57.5	1,676,333	911,164	600	96	13.8	199
Southern Region:												
Atlantic Coast Line.....1922	4,922	673,495	679,429	10,090	16,013	63.9	806,057	296,544	324	86	20.9	21
1921	4,887	578,976	579,697	7,736	13,161	62.0	683,610	251,673	303	120	28.3	36
Central of Georgia.....1922	1,915	250,145	256,142	4,742	5,399	70.0	267,094	104,275	115	15	11.5	...
1921	1,908	248,631	249,711	3,337	4,919	66.1	264,794	111,635	109	24	18.0	...
I. C. (inc. Y. & M. V.)...1922	6,137	1,823,673	1,838,821	45,259	48,479	60.5	3,019,202	1,250,681	732	101	12.1	17
1921	6,151	1,541,461	1,546,630	36,607	39,205	63.1	2,453,295	1,057,489	681	102	13.1	8
Louisville & Nashville.....1922	5,021	1,819,805	2,052,159	78,332	33,428	61.9	2,161,212	1,027,331	602	79	11.6	...
1921	5,026	1,525,126	1,632,900	58,870	26,068	59.4	1,684,824	784,349	544	107	16.4	28
Seaboard Air Line.....1922	3,537	445,951	452,365	8,126	9,810	64.7	511,087	197,869	207	67	24.6	2
1921	3,537	375,925	380,375	4,951	7,988	68.5	404,081	162,208	167	92	35.4	...
Southern Ry. 1922	6,942	1,340,100	1,365,679	29,472	29,511	66.1	1,531,302	610,665	897	146	14.0	23
1921	6,942	1,165,151	1,184,634	27,007	24,463	64.4	1,316,733	532,590	885	239	21.3	68
Northwestern Region:												
C. & N. W.....1922	8,419	1,343,493	1,373,840	18,024	30,007	65.5	1,597,585	656,571	811	232	22.3	95
1921	8,299	1,326,126	1,356,769	14,063	27,327	63.6	1,532,254	636,619	852	239	21.9	129
C., M. & St. P.[1].....1922	11,027	1,456,685	1,497,847	64,668	38,257	66.5	2,045,125	891,747	831	232	21.9	121
1921	10,618	1,313,505	1,346,474	59,600	31,797	65.6	1,713,140	747,753	830	223	21.2	176
C., St. P., M. & O.....1922	1,726	314,535	339,995	14,128	6,009	70.4	318,348	139,631	162	51	24.0	32
1921	1,726	267,606	278,218	10,167	4,918	71.3	249,796	106,167	162	51	23.9	50
Great Northern 1922	8,263	837,947	873,805	42,666	25,690	63.1	1,557,853	754,787	589	141	19.3	122
1921	8,164	681,568	700,809	25,351	18,746	63.3	1,117,264	531,595	605	178	22.7	260
M., St. P. & S. Ste. M....1922	4,355	472,079	495,824	8,816	11,421	72.5	573,806	266,763	343	61	15.0	18
1921	4,225	371,767	488,591	4,516	8,471	72.1	410,678	183,991	349	51	12.8	53
Northern Pacific 1922	6,389	790,103	827,515	50,853	23,679	66.8	1,307,838	587,813	539	140	20.6	97
1921	6,408	627,943	656,742	43,716	17,881	70.6	968,384	454,391	532	153	22.3	141
Ore.-Wash. R. R. & Nav..1922	2,186	197,316	218,185	28,982	4,671	72.3	251,401	112,951	123	33	21.3	1
1921	2,198	162,270	173,895	17,577	3,986	74.4	217,321	104,746	117	41	26.0	12
Central Western Region:												
Atch., Top. & Santa Fe....1922	9,798	1,398,865	1,465,336	66,750	38,136	66.7	2,130,191	831,387	748	155	17.1	171
1921	9,771	1,326,884	1,397,571	61,331	34,107	64.7	1,946,138	728,909	793	171	17.7	183
Chicago & Alton.....1922	1,010	270,646	274,269	6,594	6,246	66.0	338,542	132,220	106	45	29.8	27
1921	1,010	329,899	335,246	4,588	6,754	60.0	420,821	184,575	137	42	23.3	17
Chic., Burl. & Quincy.....1922	9,326	1,329,829	1,389,234	69,420	34,945	65.6	1,902,532	819,983	762	213	21.9	123
1921	9,326	1,329,815	1,384,955	60,551	33,564	62.0	2,021,833	933,966	680	266	28.1	104
Chic., Rock Isl. & Pacific..1922	7,662	1,386,132	1,408,195	15,052	31,577	67.0	1,666,856	665,881	623	125	16.7	64
1921	7,661	1,407,627	1,429,429	11,108	30,629	65.6	1,684,022	678,724	585	160	21.5	37
Denv. & Rio Grande West.1922	2,593	213,014	258,804	48,660	4,915	70.4	280,608	138,105	237	70	22.8	35
1921	2,593	146,236	176,539	29,768	2,690	66.7	158,525	77,746	229	76	24.9	60
Oregon Short Line.....1922	2,360	299,846	317,412	25,995	6,890	68.7	394,544	181,230	174	56	24.3	53
1921	2,359	244,805	250,743	15,198	5,279	63.6	315,202	140,803	183	43	19.0	60
Southern Pacific 1922	6,983	1,099,575	1,264,372	229,217	32,922	66.1	1,862,159	725,011	577	149	20.5	20
1921	6,975	1,168,887	1,353,693	273,472	32,764	66.6	1,881,931	749,258	592	184	23.7	24
Union Pacific 1922	3,707	682,178	694,577	31,552	23,463	75.0	1,175,515	483,398	407	114	21.9	183
1921	3,615	723,320	735,230	30,983	22,414	74.7	1,181,376	513,251	383	149	28.0	122
Southwestern Region:												
Gulf, Colo. & Santa Fe....1922	1,895	193,258	202,557	5,007	5,115	66.0	285,403	124,221	127	23	15.4	33
1921	1,895	254,136	258,653	3,915	6,164	64.4	360,503	163,621	89	57	38.9	...
Missouri, Kans. & Tex....1922	1,658	237,574	237,587	5,214	6,838	62.0	388,297	158,585	144	38	20.9	67
1921	1,710	225,840	226,065	7,329	5,806	60.6	335,341	136,468	147	34	19.0	60
Mo., Kans. & Tex. of Tex..1922	1,738	196,104	200,640	4,402	3,562	60.3	209,715	82,521	89	49	35.7	17
1921	1,740	210,462	214,974	2,947	3,908	57.5	241,218	98,165	99	36	26.8	23
Missouri Pacific 1922	7,305	956,490	965,334	30,407	24,743	70.7	1,326,603	603,524	423	155	26.8	7
1921	7,264	1,026,983	1,033,792	27,005	22,969	65.2	1,348,072	608,264	404	165	29.0	21
St. Louis-San Francisco....1922	4,683	891,157	905,176	15,177	16,549	62.9	980,499	427,299	363	87	19.3	11
1921	4,683	688,897	696,724	11,177	11,697	64.2	677,279	290,400	328	147	30.9	59
Southern Pacific Lines (in. Texas and Louisiana)[2].....1921	3,710	542,392	548,932	3,473	10,928	65.6	641,205	284,963	200	95	32.2	21
	3,647	488,481	489,687	3,245	9,355	62.5	560,613	242,842	182	115	38.7	9
Texas & Pacific.....1922	1,953	218,412	218,431	1,293	5,588	66.9	299,544	117,533	135	67	33.2	31
1921	1,952	237,891	238,085	2,802	5,279	67.5	282,396	112,871	121	68	36.0	25

[1]Includes Chicago, Terre Haute & Southeastern from July 1, 1921, only.

Compared with June, 1921, for Roads with Annual Operating Revenues above $25,000,000.

Region, road and year	Average number of freight cars on line daily: Home	Foreign	Total	Per cent unserviceable	Stored	Gross tons per train, excluding locomotive and tender	Net tons per loaded car	Net ton-miles per car-day	Car-miles per car-day	Net-ton miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotive and tender	Passenger service: Train-miles	Passenger-train car-miles
New England Region:													
Boston & Albany	1922 3,557	5,225	8,782	7.8	574	1,026	365	17.1	318	26.9	7,083	194	305,325	2,103,183
	1921 3,375	4,224	7,799	6.8	908	966	377	21.1	393	29.3	7,778	203	307,691	2,083,809
Boston & Maine	1922 16,760	14,285	31,045	18.2	1,531	1,101	428	18.2	224	16.8	2,833	150	814,309	4,611,464
	1921 18,232	12,897	31,129	20.0	3,091	1,104	457	21.7	248	16.6	3,132	147	867,147	4,733,413
N. Y., N. H. & H.	1922 24,496	15,743	40,239	25.1	573	1,246	478	17.7	171	13.4	3,506	151	1,021,833	6,583,867
	1921 24,810	14,532	39,342	20.8	1,900	1,231	521	22.2	199	13.5	3,993	154	1,054,382	6,897,899
Great Lakes Region:														
Delaware & Hudson	1922 11,656	5,018	16,674	7.9	4,408	1,547	695	24.8	322	18.8	6,049	186	195,106	1,076,491
	1921 11,044	4,783	15,827	12.0	1,532	1,661	810	33.3	576	29.2	10,359	176	195,069	1,050,073
Del., Lack. & Western	1922 17,973	6,679	24,652	11.7	30	1,555	624	19.6	365	26.3	9,051	157	488,205	3,599,080
	1921 17,763	6,416	24,179	9.3	774	1,700	790	26.3	538	30.6	13,074	161	490,175	3,641,819
Erie (inc. Chic. & Erie.)	1922 38,437	16,410	54,847	18.3	6,796	1,862	776	23.3	366	24.2	8,698	139	662,403	4,926,366
	1921 40,520	14,775	55,295	18.9	13,070	1,904	861	26.6	414	23.5	10,143	132	668,169	5,066,239
Lehigh Valley	1922 32,096	8,136	40,232	12.0	8,191	1,654	725	24.0	292	17.9	8,916	158	338,635	2,725,018
	1921 32,225	8,786	41,011	18.3	3,957	1,758	825	29.1	349	19.1	10,859	158	358,156	2,723,155
Michigan Central	1922 16,491	13,095	29,586	17.8	.....	1,695	654	79.8	363	27.4	5,876	114	562,983	5,066,533
	1921 19,812	12,404	32,216	17.1	2,014	1,641	618	20.9	271	21.2	4,780	117	573,442	5,028,171
New York Central	1922 79,760	43,967	123,727	18.4	10,062	1,988	800	21.2	335	23.2	7,294	113	2,392,700	20,195,028
	1921 90,018	46,086	136,104	14.1	31,673	2,004	845	25.1	324	21.1	7,800	112	2,312,784	19,246,684
N. Y., Chic. & St. L.	1922 3,724	5,496	9,220	7.9	663	1,628	616	18.8	767	59.7	13,853	103	98,437	689,794
	1921 5,621	5,171	10,792	15.8	1,655	1,589	594	19.3	566	44.9	11,964	98	86,802	555,190
Pere Marquette	1922 10,747	10,301	21,048	12.4	383	1,351	591	23.0	287	18.2	2,770	117	282,866	1,530,654
	1921 11,436	8,608	20,044	16.4	1,000	1,296	535	24.7	286	17.7	2,608	130	314,071	1,563,114
Pitts. & Lake Erie	1922 20,139	10,504	30,643	32.2	5,932	1,980	1,116	36.5	106	4.4	14,256	85	113,997	586,771
	1921 17,736	7,268	25,004	25.1	1,931	2,273	1,328	40.7	124	4.7	13,824	96	107,096	572,645
Wabash	1922 12,076	10,316	22,392	11.2	712	1,460	604	20.6	507	34.1	4,700	136	535,556	2,949,685
	1921 13,166	9,642	22,808	10.4	1,159	1,528	639	21.9	440	29.2	4,152	148	516,314	2,752,473
Ohio-Indiana-Allegheny Region:														
Baltimore & Ohio	1922 68,600	34,487	103,087	14.8	7,858	1,545	761	29.1	415	21.3	8,170	171	1,458,257	9,193,805
	1921 72,087	27,739	99,826	11.3	6,892	1,595	794	33.0	438	22.5	8,436	175	1,356,941	8,622,487
Central R. R. of N. J.	1922 20,981	8,195	29,176	5.8	11,422	1,173	526	24.8	137	8.2	5,792	211	369,654	1,787,229
	1921 20,498	8,421	28,919	23.8	4,801	1,489	723	32.8	211	10.9	9,009	175	359,932	1,756,282
Chicago & Eastern Ill.	1922 15,912	4,946	20,858	14.6	7,317	1,371	614	24.9	224	14.5	4,949	150	210,304	1,361,476
	1921 16,615	3,288	19,903	10.2	4,861	1,344	644	28.5	226	12.7	3,970	165	217,614	1,412,660
C., C., C. & St. L.	1922 17,416	19,737	37,153	14.2	6,330	1,891	880	28.3	534	30.2	8,326	112	682,096	4,206,030
	1921 18,098	15,721	33,819	11.8	5,191	1,668	687	26.2	394	26.7	5,595	131	703,165	4,372,450
Elgin, Joliet & Eastern	1922 8,914	5,578	14,492	11.6	40	2,172	1,151	37.5	247	9.8	7,798	120	(1)	(1)
	1921 9,993	3,368	13,361	7.3	3,387	2,165	1,133	38.2	217	8.6	6,340	114	(1)	(1)
Long Island	1922 2,126	3,090	5,216	4.8	109	629	216	19.5	58	5.1	767	388	222,296	1,312,964
	1921 2,309	3,435	5,744	2.5	1,237	638	239	21.7	56	4.5	820	382	216,940	1,255,828
Pennsylvania System	1922 202,302	80,793	283,095	12.9	34,267	1,614	742	27.6	352	19.2	9,135	138	4,961,892	33,013,522
	1921 221,756	67,999	289,755	11.9	62,515	1,784	882	34.1	397	19.0	10,562	128	4,967,337	32,822,583
Phila. & Reading	1922 25,006	11,355	36,361	4.7	9,507	1,431	767	30.5	301	15.0	9,768	176	493,985	2,278,772
	1921 28,377	10,444	38,821	9.7	7,874	1,660	860	35.4	369	16.9	12,796	168	518,311	2,360,312
Pocahontas Region:														
Chesapeake & Ohio	1922 35,713	16,346	52,059	14.5	678	2,486	1,368	42.7	713	28.2	14,573	114	440,680	2,524,121
	1921 41,652	12,000	53,652	8.8	2,114	2,375	1,292	44.3	667	26.9	14,050	116	433,739	2,463,447
Norfolk & Western	1922 29,063	11,743	40,806	5.3	.....	2,323	1,261	44.3	1,054	41.7	19,299	152	387,372	2,394,028
	1921 36,366	5,800	42,166	8.6	2,603	2,222	1,208	42.8	720	29.2	13,743	152	394,937	2,471,169
Southern Region:														
Atlantic Coast Line	1922 18,189	10,087	28,276	15.3	.....	1,197	440	18.5	350	29.6	2,008	118	687,309	4,282,524
	1921 22,298	7,076	29,374	19.6	.....	1,181	435	19.1	286	24.1	1,716	123	716,762	4,368,952
Central of Georgia	1922 4,034	4,666	8,700	13.9	.....	1,068	417	19.3	400	29.5	1,815	150	324,497	1,655,482
	1921 5,344	4,237	9,581	16.0	.....	1,065	449	22.7	388	25.9	1,950	141	313,762	1,525,486
I. C. (Inc. Y. & M. V.)	1922 40,041	24,967	65,008	11.4	4,025	1,656	686	25.8	641	41.1	6,794	127	1,416,623	8,221,856
	1921 47,899	17,212	65,111	12.0	8,376	1,592	686	27.0	541	31.8	5,730	127	1,405,221	8,091,672
Louisvile & Nashville	1922 32,188	22,592	54,780	11.2	70	1,188	565	30.7	625	32.9	6,820	161	987,160	5,707,163
	1921 39,620	15,120	54,740	25.9	108	1,105	514	30.1	478	26.7	5,202	159	935,800	5,462,924
Seaboard Air Line	1922 12,564	9,846	22,410	34.6	.....	1,146	444	20.2	294	22.5	1,865	157	532,930	3,009,837
	1921 11,794	6,987	18,781	26.2	.....	1,075	432	20.3	288	20.7	1,529	176	542,482	3,132,269
Southern Ry.	1922 34,664	23,159	57,823	18.6	.....	1,143	456	20.7	352	25.7	2,932	177	1,255,603	7,316,971
	1921 40,339	16,641	56,980	13.8	2,962	1,130	457	21.8	312	22.2	2,557	187	1,258,794	7,467,298
Northwestern Region:														
C. & N. W.	1922 46,015	24,273	70,288	8.4	5,100	1,189	489	21.9	311	21.7	2,600	143	1,591,382	10,211,084
	1921 49,579	22,381	71,960	8.9	6,500	1,155	480	23.3	295	19.9	2,557	172	1,664,756	10,414,545
C., M. & St. P.[1]	1922 51,069	22,416	73,485	17.0	.....	1,404	612	23.3	405	26.1	2,696	137	1,450,427	9,183,440
	1921 44,970	17,708	62,678	17.4	3,400	1,304	569	23.5	398	25.8	2,347	155	1,472,182	9,224,209
C., St. P., M. & O.	1922 3,835	9,400	13,235	13.3	1,645	1,012	444	23.2	352	21.5	2,696	139	308,426	1,830,249
	1921 4,426	10,899	15,325	13.3	2,949	933	397	21.6	231	15.0	2,050	175	313,904	1,817,762
Great Northern	1922 45,090	5,993	51,083	14.2	.....	1,859	901	29.4	493	26.6	3,045	117	978,907	6,238,557
	1921 46,866	5,477	52,343	21.4	.....	1,639	789	28.4	339	18.9	2,171	146	974,870	6,230,668
M., St. P. & S. Ste. M.	1922 18,596	6,197	24,793	8.6	2,900	1,216	565	23.4	359	21.2	2,042	111	448,209	2,789,231
	1921 18,278	5,427	23,705	10.9	4,433	1,105	495	21.7	259	16.5	1,452	124	448,661	2,710,645
Northern Pacific	1922 34,092	7,954	42,046	11.4	159	1,655	744	24.8	466	28.1	3,067	122	885,396	6,378,567
	1921 39,016	6,670	45,686	13.8	9,429	1,542	724	25.4	332	18.5	2,364	119	864,917	6,011,058
Ore.-Wash. R. R. & Nav.	1922 7,232	2,043	9,275	3.0	2,831	1,274	572	24.2	406	23.2	1,723	198	256,198	1,865,299
	1921 5,506	2,696	8,202	3.0	2,516	1,339	646	26.3	426	21.8	1,589	199	250,969	1,796,117
Central Western Region:														
Atch., Top. & Santa Fe.	1922 50,377	12,589	62,966	8.4	10,691	1,523	594	21.3	440	30.3	2,828	134	1,732,194	13,905,498
	1921 48,301	13,343	61,644	11.2	8,506	1,467	549	21.4	304	28.5	2,487	141	1,566,685	11,634,102
Chicago & Alton	1922 9,971	4,776	14,747	3.7	1,200	1,251	489	21.2	299	21.4	4,363	169	277,118	1,621,391
	1921 10,189	4,371	14,560	4.4	1,186	1,276	559	27.3	423	25.8	6,090	174	286,145	1,644,524
Chic., Burl. & Quincy	1922 48,152	20,519	68,671	9.9	8,799	1,431	617	23.5	398	25.9	2,931	142	1,504,899	10,367,872
	1921 49,933	17,360	67,293	15.3	3,608	1,520	702	27.8	463	26.8	3,338	152	1,498,238	10,067,042
Chic., Rock Isl. & Pacific	1922 33,010	14,168	47,178	10.8	4,592	1,203	480	21.1	470	33.3	2,897	142	1,299,408	7,943,718
	1921 34,120	16,725	50,845	11.8	7,913	1,196	482	22.2	445	30.6	2,953	150	1,338,108	7,932,082
Denv. & Rio Gr'de West.	1922 13,785	2,760	16,545	10.0	2,789	1,317	648	28.1	278	14.1	1,775	184	278,746	2,069,421
	1921 13,575	2,388	15,963	7.6	1,542	1,084	532	28.9	162	8.4	999	214	160,647	1,034,446
Oregon Short Line	1922 7,048	2,669	9,717	8.3	154	1,316	604	26.3	622	34.4	2,560	131	292,790	2,248,897
	1921 7,314	2,356	9,670	6.5	1,588	1,288	575	26.7	485	28.6	1,990	163	302,530	2,278,578
Southern Pacific	1922 23,588	22,334	45,922	5.5	5,248	1,694	659	22.0	526	36.1	3,461	140	1,471,410	12,727,102
	1921 23,448	22,055	45,503	9.4	3,674	1,610	641	22.9	549	36.0	3,581	148	1,389,878	11,144,638
Union Pacific	1922 17,481	6,428	23,909	15.3	3,540	1,723	709	20.6	674	43.6	4,346	130	917,064	8,148,019
	1921 20,494	5,875	26,369	22.9	5,691	1,633	710	22.9	649	37.9	4,733	143	935,684	8,454,827
Southwestern Region:														
Gulf, Colo. & Santa Fe.	1922 6,921	4,011	10,932	4.9	547	1,477	643	24.3	379	23.6	2,186	127	192,298	1,118,825
	1921 8,264	2,653	10,917	4.9	432	1,419	644	26.5	500	29.2	2,879	135	189,986	1,114,378
Missouri, Kans. & Tex.	1922 8,793	5,816	14,609	7.7	4,633	1,634	668	23.2	362	25.2	3,188	127	260,349	1,837,796
	1921 8,074	4,574	12,648	7.5	2,357	1,485	604	23.5	360	25.2	2,661	133	263,345	1,888,221
Mo., Kans. & Tex. of Tex.	1922 275	9,835	10,110	7.3	1,589	1,069	421	23.2	272	19.5	1,583	145	266,007	1,619,075
	1921 373	12,627	13,000	4.5	1,824	1,145	466	25.1	252	17.4	1,881	152	269,913	1,680,934
Missouri Pacific	1922 29,204	18,727	47,931	10.3	2,000	1,387	631	24.4	417	24.3	2,754	139	911,067	5,374,636
	1921 32,853	18,007	50,860	10.0	5,289	1,313	592	26.5	399	23.1	2,791	144	894,450	5,211,703
St. Louis-San Francisco.	1922 20,451	12,324	32,775	7.4	.....	1,100	479	25.8	435	26.7	3,042	163	739,144	4,267,652
	1921 21,340	8,793	30,133	7.4	.....	983	422	24.8	321	20.1	2,067	171	758,795	4,318,101
Southern Pacific Lines (in. Texas and Louisiana)[2]	1922 7,624	11,717	19,341	8.3	1,393	1,182	525	26.1	491	28.7	2,560	121	534,962	3,546,387
	1921 9,322	13,069	22,391	19.7	3,264	1,148	497	26.0	362	22.3	2,219	128	511,301	3,267,132
Texas & Pacific	1922 5,686	4,966	10,652	19.3	.....	1,371	538	21.0	368	26.1	2,006	132	285,742	1,855,106
	1921 6,554	4,523	11,077	21.9	.....	1,187	474	21.4	340	23.6	1,927	143	292,392	1,921,363

[1] No passenger train service.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Foreign Railway News

South African Railways to Extend Lines

After two years' postponement, owing to the depressed state of trade and the consequent financial stringency, a program of new railway construction has been put before the Union of South Africa Parliament by the Minister of Railways, according to the Times (London) Trade Supplement.

This program includes 851 miles of track, estimated to cost over £4,000,000, and if account is taken of the line from Windhoek to Gobabis in the South-Western Protectorate, the construction of which was undertaken for the relief of unemployment, the total length of line being, or to be built, exceeds 1,000 miles. As electrification work, to cost over £4,000,000, is in hand on the Natal main line, as well as sundry minor deviations and betterments throughout the system, the chief engineer and his staff are likely to have plenty to do for several years to come.

Most of the new railways will be light branch lines serving agricultural districts that at present have no railway communication. In some cases they will be prolongations of existing spurs, but in others they will be new branches off the main system. They will all be on the normal gage of 3 ft. 6 in., except three, which are to be of 2 ft. gage.

Among them the Franklin-Kokstad, and Franklin-Matatiele extensions—25½ and 47½ miles in length respectively—are of interest, as forming links in the long projected direct connection between the Cape and Natal provinces. For seven years Franklin has been the terminus of a line 140 miles long, which leaves the Natal main line at Mason's Mill, about a mile from Pietermaritzburg. Although Kokstad is a town of 3,500 people the railhead has remained 22 miles away by road, and the fact that this extension is now to be put in hand, in addition to one of about double the length, to link up the neighboring East Griqualand village of Matatiele, suggests that future policy regarding the routes to be followed by the Cape-Natal connection has now been settled and that the two systems will be linked together within the next decade.

There are two spurs of the Cape Eastern main line running towards East Griqualand. That nearer to the coast extends from Amabele Junction, 51 miles from East London, to Umtata, and is 175 miles long. It traverses very difficult country, looping over itself and twisting about so much that the bee-line distance is exceeded by fully 75 per cent. It seems evident that the Kokstad fork of the line coming from Natal is destined to be linked up with the Umtata dead end. The latest survey of the route from Kokstad to Umtata gives a distance of 151½miles. If this gap is bridged the total distance from Durban to East London, via Kokstad, will be about 610 miles, compared with 916 miles by the present route via Bloemfontein and Ladysmith. Between Port Elizabeth and Durban the saving would be only 17 miles, and between Cape Town and Durban, the present route is 150 miles shorter than that via Umtata and Kokstad.

The termini of the new lines from Touws River to Ladysmith (89 miles) and Oudtshoorn to Calitzdorp (34 miles) will be only about 30 miles apart, and their general alinement is such that if they are eventually extended to meet one another they may form an important cross connection between the Cape Western and Midland main lines and one which will shorten the distance between Cape Town and Port Elizabeth by perhaps 30 miles, as compared with the route via Worcester and Mossel Bay. Touws River is 160 miles from Cape Town on the Western main line and is the point to which it has been suggested that that line should be electrified.

The branch from Fort Beaufort to Bredasdorp will assist to open up the somewhat isolated area towards Cape Agulhas in the extreme south of the Continent. Bredasdorp will, indeed, be the most southerly railway station in Africa, though about 20 miles north of Cape Agulhas itself.

The railway from George to Knysna (42 miles) will place Knysna—which shares with Port St. Johns at the mouth of the Umzimvubu river the distinction of being one of the two ports of any consequence that are not linked up with the Union railway system—in connection with the Mossel Bay-Port Elizabeth route. The narrow-gage line from Upington (on the Orange river, where the railway that connects the Union with the South-West Protectorate crosses) to Kakamas will follow the south bank of the Orange and give railway facilities to an irrigation area that has been attracting settlers in recent years. A few miles below Kakamas are the great Aughrabies Falls, where the river drops 400 feet. Though, like the Victoria Falls, they are too far from an industrial area to offer much immediate inducement as regards power development, it is possible that they will eventually be utilized for railway electrification and industrial purposes.

The Ermelo-Lothair line, which will be about 27 miles long, is at first glance purely an agricultural feeder. In view of the fact that it heads eastward, it may, however, possess some significance in connection with the manœuvring that is in progress between the Union and the Mozambique administrations regarding a renewal of the convention regulating traffic, customs matters, and labor recruiting. It has been stated that if the convention is not renewed the Union will develop Kosi Bay, on the northern Zululand coast, as a rival port to Lourenço Marques, and to do so the first step would be to provide a railway to the bay. It has been assumed that such a railway would connect with the existing system near Piet Retief, and the Ermelo-Lothair line does not fit in very well with either the Kosi Bay plan or the older scheme of building a railway across Swaziland from Breyten, to link up with a short section built several years before the war by the Portuguese on the strength of an assurance from Lord Milner—then Governor of the Transvaal—that the Transvaal railways would be extended to meet it. There has been much controversy about the failure to carry out that promise, but the fact appears to be that, in so far as reduced mileage was an inducement, it has ceased to have much weight, the Apex-Witbank cut-off having so shortened the distance from Johannesburg to Lourenço Marques that the Swaziland line would be practically as long as the existing route.

Relief Administration Tells of Railway Improvement in Russia

Russian railroad transportation is coming back, according to the American Relief Administration. Trains are being speeded up, time tables revised and freight is being moved at a rate which a few months ago seemed impossible.

The Relief Administration, whose huge shipments of corn and other foodstuffs into the famine districts taxed the capacity of the roads for months, has all but completed its grain shipments and from now on will confine its traffic chiefly to child-feeding commodities and medical supplies.

From 50 cars sent out in August, 1921, by the Administration, the number had risen in March to 8,585 and although the opening up of navigation on the Volga and its tributaries decreased the rail shipments, permitting to date the movement of some 46,000 metric tons of grain by water, rail shipments have continued heavy, amounting to 5,710 cars in April and 7,846 cars in May.

Each month from August, 1921, up to and including March, 1922, showed an increase in the number of cars dispatched and each month during that period, with the exception of February, showed an increase in the number of cars arriving at their destination. But the number of cars arriving did not keep pace with the number dispatched. In other words, at the close of each month there was an increased number of cars en route.

Not until April did the tide turn. In that month 5,710 cars were dispatched into the famine districts from the ports and from the warehouse centers and 7,197 arrived at their destination. At the end of March there were 8,684 cars en route, or 99 more than had been dispatched in any single month since the operation began late in August, 1921. But the end of April saw the number of cars en route reduced from 8,686 to 7,197, and although 7,846 cars were dispatched in May the end of May saw the number en route reduced to 6,783.

The chief of the transportation department of the Administration, Philip Matthews, says that present indications point to a reduction of the number of food cars en route as of the end of June to 3,000.

He also predicts that figures will show that by the first of July not more than 10,000 tons of the grain shipped from the United States for the American Relief Administration remained unevacuated from the ports. Shipments will, of course, continue after that date, of the remaining grain and also of the child-feeding commodities, such as white flour, cocoa, vegetable fats, rice and beans.

Equipment and Supplies

Locomotives

THE UNION PACIFIC has ordered 15, 2-10-2 type locomotives from the Baldwin Locomotive Works.

THE WABASH, CHESTER & WESTERN has ordered 2 Consolidation type locomotives from the Baldwin Locomotive Works.

THE TENNESSEE, ALABAMA & GEORGIA has ordered 1 Consolidation type locomotive from the Baldwin Locomotive Works.

MCKELVEY BROTHERS, Hollidaysburg, Pa., has ordered 1, 50-ton superheated Shay locomotive from the Lima Locomotive Works.

THE NEW YORK CENTRAL is having repairs made to 50 locomotives of various types, at the shops of the Rome Locomotive Works.

THE MISSOURI, KANSAS & TEXAS has placed an order with the Lima Locomotive Works, Inc., for 40 Mikado and 5 Pacific type locomotives.

THE LOUISVILLE & NASHVILLE has ordered 30 Mikado type locomotives from the American Locomotive Company. These locomotives will have 26 by 30 in. cylinders and a total weight in working order of 295,000 lbs.

Freight Cars

THE CENTRAL OF NEW JERSEY is having 200 steel hopper cars repaired at the shops of the Pressed Steel Car Company, and 300 at the shops of the Standard Steel Car Company.

THE PHILADELPHIA & READING, reported in the *Railway Age* of July 10 as inquiring for 100 refrigerator cars, has ordered this equipment from the American Car & Foundry Company.

THE POLISH GOVERNMENT has ordered 7,000 freight cars from the War Department of the United States Government. These cars were originally built for overseas service during the war.

THE CHICAGO, INDIANAPOLIS & LOUISVILLE reported in the *Railway Age* of July 22 as inquiring for 300 composite gondola cars of 50 tons' capacity, has ordered 300 cars from the Pullman Company.

Passenger Cars

THE ATCHISON, TOPEKA & SANTA FE, reported in the *Railway Age* of July 1 as inquiring for 8 buffet library cars, has ordered this equipment from the Pullman Company.

Iron and Steel

THE NEW YORK CENTRAL is buying 200 tons of fabricated steel for improvements at Elyria, Ohio.

Signaling

THE SOUTH SIDE ELEVATED RAILROAD, Chicago, has ordered from the Union Switch & Signal Company an electro-pneumatic interlocking for Jackson Park; Model 14 machine with eight working levers. All principal routes will be protected by electro-pneumatic train stops.

THE NORTHWESTERN ELEVATED of Chicago has ordered from the Union Switch & Signal Company an electro-pneumatic interlocking for Howard Street Terminal; Model 14 machine with 23 working levers for 43 signals and eight automatic stops, and 19 levers for switches. The signals are the low type standard on the Northwestern Elevated. Alternating current track circuits will be used for control and indication instruments.

Supply Trade News

The office of the **Hardwood Manufacturers' Institute** was removed on August 16, from Memphis, Tenn., to 1020 South Wabash avenue, Chicago.

The Florandin Equipment Company has been organized by C. H. Florandin, with offices at 110 West Fortieth street, New York, to act as representatives of the Conveyors Corporation of America, Chicago. Mr. Florandin for several years was eastern manager of the Conveyors Corporation before forming his own organization.

G. B. Pierce, who has been connected with the **Westinghouse Air Brake Company** for the last 12 years as a mechanical expert, at the St. Paul office, has been promoted to air brake engineer and transferred to the Orient where he will act in that capacity both for the Westinghouse Air Brake Company and the Westinghouse Traction Brake Company, in a territory covering Japan, China, Manchuria and Korea. Early in September Mr. Pierce will sail for Japan to associate himself with W. G. Kaylor, manager of the Westinghouse Air Brake interests in the Orient, with whom he expects to make his headquarters in Tokyo. Mr. Pierce was formerly in railroad work. Having served as a fireman, he became an engineman on the Montana division of the Northern Pacific in 1901. He later served as acting road foreman of engines on the same division and for three years was a member of the local examining board on transportation rules at Livingston. In 1910 he left this road to join the Westinghouse Air Brake Company.

H. A. Matthews, formerly sales manager of the railway division of the U. S. Light & Heat Corporation, Niagara Falls, N. Y., has been elected a vice-president. Mr. Matthews entered the railway supply business in 1912 with the U. S. Light & Heat Corporation at Chicago. Prior to that time he had been employed by the Lake Shore & Michigan Southern as clerk to the general superintendent at Cleveland, and later entered the services of the Pullman Company. For seven years he was secretary to the president of the Pullman Company, which position he held up to the time he joined the U. S. L. forces at Chicago. In 1917 he was transferred to the factory at Niagara Falls and placed in charge of the railway sales department.

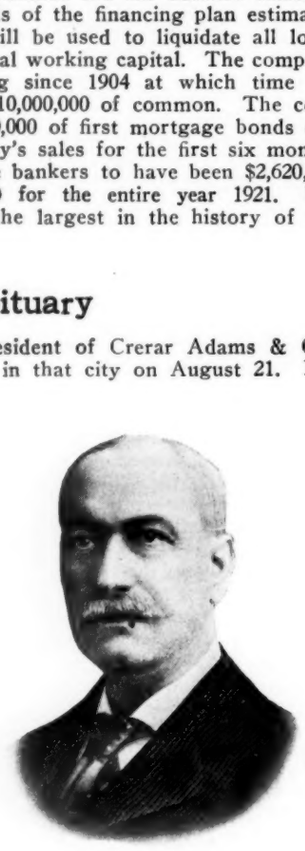
H. A. Matthews

The New York Air Brake Company's plan for refinancing contemplates an authorization of 100,000 shares of Class A preference stock without par value and 300,000 shares of common stock without par value. Of the latter 200,000 shares are to be exchanged for the now outstanding $10,000,000 common stock of $100 par value at the rate of two shares for one, the remaining 100,000 shares being reserved for Class A preference stock. A banking syndicate is being formed to underwrite the new Class A preference stock which will be offered to stockholders at $50 a share. Class A stock will be entitled to receive cumulative quarterly dividends at the rate of $4 a share per annum. After the common stock has received $4, the two classes share equally in any additional dividends. Preferred stock is redeemable after January 1, 1926, in whole or in part, at $60. It is convertible at $50 a

share into common stock at $50 a share. Edward B. Smith & Co. and Dominick & Dominick are the bankers handling the financing. The proceeds of the financing plan estimated to raise about $5,000,000 will be used to liquidate all loans from banks and for additional working capital. The company has done no new financing since 1904 at which time the amount was increased to $10,000,000 of common. The company has outstanding $3,000,000 of first mortgage bonds due in May, 1928. The company's sales for the first six months of 1922 are reported by the bankers to have been $2,620,000 as compared with $2,400,000 for the entire year 1921. Unfilled orders on hand are the largest in the history of the company.

Obituary

Edward S. Shepherd, president of Crerar Adams & Co., Chicago, died at his home in that city on August 21. Mr. Shepherd was born in Orleans, N. Y., on May 28, 1845, and entered railway service in the purchasing department of the Illinois Central, with headquarters at Chicago, in 1865. He served this company four years and in 1869 entered the service of Crerar Adams & Co. as a salesman. He served in that capacity until 1877. During that year he was made a junior partner in the company and in 1890 was elected president which position he has occupied for the past twenty-three years.



E. S. Shepherd

Coleman Sellers, Jr., president of William Sellers & Co., Inc., Philadelphia, Pa., who died on August 15, as was mentioned in the *Railway Age* of August 19, was in his seventieth year and had been ill for several months. His connection with the Sellers house, then a partnership, began in 1873 immediately after his graduation from the University of Pennsylvania. After serving a practical course in the shops for several years, he took a position in the drafting room of which he soon became the head. He was appointed assistant manager in 1887, becoming at the same time a director of the company. He was elected engineer in 1902 and president in May, 1905, which last office he held continuously until his death. He also was a man of liberal ideas, and while his principal inclinations and activities were in mechanical and engineering lines, he took keen interest in many other directions, scientific, literary, educational and the arts, and was active in the civic life of Philadelphia. He was long active in the affairs of the Franklin Institute, of which he was vice-president at the time of his death. He was a member of the Board of Commissioners of Navigation of Pennsylvania, to which he was appointed in 1907. He was active in the affairs of the American Society of Mechanical Engineers, the American Society of Naval Architects and Marine Engineers and the Engineers Club of Philadelphia of which he was one of the founders. He was president of the Chamber of Commerce from 1909 to 1913. He served as chairman of the local draft board during the early stages of the war.

Coleman Sellers, Jr.

Frank Burr Smith of Milford, Conn., works manager of the Bullard Machine Tool Company, Bridgeport, died on August 16 at Grace hospital, New Haven. Mr. Smith was born at Fairfield, Conn., on November 22, 1872, and obtained his early education in the public and high schools of Bridgeport. He entered the employ of the Bullard Machine Tool Company at its old Broad street plant in 1890 as a machinist apprentice and upon completion of his apprenticeship he was connected with its engineering department. He subsequently served in different machine shops and at one time was connected with the Atlantic Iron Works of Boston, and later was with the Laird Gold Production Company as mechanical engineer. In 1903 he went to the DeLaVergne Machine Company, as expert erection and installation engineer. He returned in 1911 to the Bullard Machine Tool Company, and represented this company in a sales capacity, making his headquarters successively at Chicago, Cleveland and Philadelphia. The last year of his sales work was spent in England. He became manager of the employment and industrial relations department at the Broad street plant, and when that plant was disbanded in 1920, and all manufacturing was transferred to the Black Rock plant, he was made works manager and continued in that capacity until his death.

Trade Publications

DRINKING WATER SYSTEMS.—A folder entitled "A Neglected Source of Economy," has recently been issued by the Armstrong Cork & Insulation Company, Pittsburgh, Pa., which deals with the savings that can be effected in shops by the use of refrigerated drinking water systems.

DIRECT DRIVE AXLE GENERATOR.—Specifications and description of a direct drive axle generator and system for the electric lighting of railway cars are contained in a 16-page bulletin published by the Products Distributing Corporation, 360 Madison avenue, New York, N. Y. The equipment described in this bulletin will be offered to the railroads by the above company and will be built by the Wagner Electric Company, St. Louis, under the E. M. Fitz patents. The booklet is profusely illustrated with photographs and line drawings and contains brief specifications and descriptions of the equipment. A blue print insert is included on which curves are shown giving the characteristics of the generator.

ELECTRIC TRACTION.—Progress in Steam Railway Electrification is the title of bulletin No. 44016 issued by the General Electric Company, Schenectady, N. Y. The bulletin contains 20 pages and is illustrated with photographs. It reviews some of the more important electrifications throughout the world for which the General Electric Company has supplied the apparatus, either in its entirety or in the more important parts. This includes the Baltimore and Ohio, the Paris-Orleans, the New York Central, the Great Northern, the Michigan Central, the Victorian Railways in Australia, the Canadian Northern, the Butte, Anaconda & Pacific, the Chicago, Milwaukee & St. Paul, the Bethlehem Chile Iron Mines in Chile, the Spanish Northern, the Imperial Government Railways of Japan, the South Manchurian Railway and the Central of Paulista in Brazil.

TRAIN LIGHTING EQUIPMENT.—The Safety Car Heating & Lighting Co. has recently issued two new catalogues and an elaborate folder which will be of interest to anyone connected with train lighting work and of especial interest to the users of safety equipment. One of the catalogues bears the title, "Operation of Under-Frame Car Lighting Equipment" and the other, "Pintsch Gas Car Lighting Fixtures." Both catalogues are profusely illustrated and contain 60 and 52 pages respectively. A novel and useful feature has been introduced in the Under-Frame catalogue, which consists of cross-indexed tables which show at a glance which of the various generator parts can be used interchangeably on two or more of the ten types of generators manufactured by the Safety Company.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company, which was reported in the *Railway Age* of April 22 as authorizing the construction of a new division office building at Newton, Kan., has awarded the contract for this structure to Swanson Bros., Topeka, Kan. The building will be 70 ft. by 160 ft. and will be three stories high, costing approximately $200,000.

CANADIAN PACIFIC.—This company has prepared plans for new stations at Napinka, Man., and Chaton, Alta. A new detention shed will be erected at Coutts, Alta., and the roundhouse at Medicine Head, Alta., and Calgary will be enlarged. This company is also planning to install two 90-ft. turn tables at Brandon, Man., and North Bend, B. C., and a coaling plant will be constructed at Secretan, Sask. A transfer barge will be constructed on Kootenay Lake, B. C., and the temporary wharves at Nelson, B. C., will be made permanent.

CHICAGO, BURLINGTON & QUINCY.—This company will accept bids until September 1 for the construction of a one-story brick freight house, 20 ft. by 60 ft. at Zeigler Junction, Ill.

ILLINOIS CENTRAL.—This company has awarded a contract to the Ellington-Miller Co., Chicago, for the altering of its freight house at Indianapolis, Ind., at an estimated cost of approximately $40,000. This company has also awarded the contract to the Ellington-Miller Co. for alterations to its fruit sheds at Mound, Ill.

ILLINOIS CENTRAL.—This company, which was reported in the *Railway Age* of August 5 as calling for bids for the construction of 12 water treating plants, has awarded contracts for those at Galena, Ill.; Amboy, Ill.; Fort Dodge, Ia., and Council Bluffs to Joseph E. Nelson & Sons, Chicago, and those at Wall Lake, Ia.; Logan, Rockwell City and Denison to the Railroad Water and Coal Handling Company, Chicago.

IRON COUNTY.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a line from a connection with the Los Angeles & Salt Lake at Lund, Utah, for a distance of 22.6 miles southeasterly through Iron County, Utah.

LOS ANGELES & SALT LAKE.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of a branch from Lund to Cedar City, Utah, 32 miles.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—This company closed bids August 14 for the construction of a passenger station at Menasha, Wis., and a 21-stall roundhouse at Gladstone, Mich.

THE MISSOURI, KANSAS & TEXAS.—Contracts have been awarded to the Graver Corporation, Chicago, for one 15,000-gallon per hour Graver Type "K" ground operated water softener with storage capacity at top of softener capable of holding 100,000 gallons of treated water for installation at Glen Park Yards, Kansas City, Kan.; one 10,000-gallon per hour Graver Type "K" ground operated water softener for installation at Nelogony, Okla.; one 5,000 gallon per hour Graver Type "K" ground operated water softener for installation at Eufaula, Okla., and for four standpipes 14 ft. diameter by 32 ft. high and one 18 ft. diameter by 32 ft. high for installation in Texas.

SAN FRANCISCO-SACRAMENTO.—This company, in conjunction with the California State Department of Public Works, will construct an overhead crossing over its tracks near Denverton, Solano county, Cal., at an estimated cost of $26,000.

THE UNION PACIFIC.—Contracts have been awarded to the Graver Corporation of Chicago, for one 30,000-gallon per hour Graver Type "K" ground operated water softener for Granger, Wyo. This treating plant will be equipped with two standard Graver pressure filters 8 ft. diameter to 12 ft. long. The contract also covers the reconstruction of five present treating plants to the improved Graver Type "K" design.

Railway Financial News

BALTIMORE & OHIO.—*Equipment Trust Authorized.*—The Interstate Commerce Commission has authorized this company to assume obligations and liability in respect of $6,750,000 of equipment trust certificates to be issued by the Girard Trust Company of Philadelphia to be sold at not less than 96.4.

BIRMINGHAM & NORTHWESTERN.—*Asks Authority to Issue Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $750,000 of 4½ per cent refunding gold bonds for the purpose of refunding maturing bonds and providing security for a loan from the Interstate Commerce Commission.

Acquisition.—See Gulf, Mobile & Northern.

CHESAPEAKE & OHIO.—*Preferred Stock Issue.*—A special meeting of stockholders will be held at Richmond, Va., on September 26 to approve a plan to offer to common stockholders the right to subscribe at par to 20 per cent of their holdings for approximately $12,558,500 of new 6½ per cent cumulative preferred stock, series A. The proceeds will be used to finance additions and betterments. The offering has been underwritten by Kuhn, Loeb & Co., and the National City Company. It is subject to the approval of the Interstate Commerce Commission. This issue is the first of a total of $30,000,000 over a term of years.

A circular to the stockholders says in part:

In the annual report of your company for 1921 reference was made to the comprehensive budget prepared by your officers of additions, betterments and improvements which should be made during the next four years in order to adequately and economically accommodate the present day maximum volume of traffic, provide for anticipated growth and render its facilities more nearly equal to those of your principal competitors. Among the principal items included in this budget are the extension of your terminal facilities at Hampton Roads, the enlargement of your shop and round house facilities, and such additions to your main line and passing tracks, including the reduction of grades, as will render practicable the economical and expeditious handling over your entire main line of the maximum train load which can be moved with modern power of the type in use upon your lines. The present estimate of the probable cost of this work, including incidental operating charges of about $1,150,000, is about $16,500,000, expenditure of which will be spread over the next four years. It is estimated that the making of these expenditures will realize an annual saving in operating expenses, based upon 1920 performances, of nearly $4,000,000. Your directors believe that the present is a favorable time for arranging the necessary financing of this work, and in connection therewith for making suitable provision for the future capital requirements of your company.

GULF, MOBILE & NORTHERN.—*Asks Authority to Purchase Road.*—This company has applied to the Interstate Commerce Commission for an order approving the acquisition by purchase of the property of the Birmingham & Northwestern, and also for authority to issue $300,000 of capital stock for the purpose.

MEMPHIS, DALLAS & GULF.—*Sold.*—This road was sold in sections on August 15 under court order to Sears Lehmann, of St. Louis, Mo., who represented different interests. The road formerly operated between Hot Springs, Ark., and Dalark, 125 miles, until recently when the Interstate Commerce Commission authorized the receiver to abandon 51 miles.

NASHVILLE, CHATTANOOGA & ST. LOUIS.—*Asks Authority to Sell Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $747,000 of first consolidated mortgage 5 per cent gold coupon bonds dated April 2, 1888, and due April 1, 1928, to provide for the payment at maturity of bonds of its Jasper and Centreville branches. The bonds are to be sold on a 6 per cent basis.

NEVADA-CALIFORNIA-OREGON.—*Authorized to Abandon Line.*—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of 16 miles of this company's railroad between Hackstaff and Wendel, Calif. The company had applied for a certificate to abandon its entire line, but the commission instituted an investigation on its own motion of the divisions received of joint rates and last week issued an order increasing the division on traffic interchanged with the Southern Pacific at Wendel. In that proceeding it reached the conclusion that the road as a whole cannot be abandoned, but that portion of the southerly 16 miles between Wendel and Hackstaff where traffic was interchanged with the Western Pacific may be abandoned.

PENNSYLVANIA.—*Asks Authority to Lease Subsidiaries.*—This company has applied to the Interstate Commerce Commission for authority to lease for 999 years the properties of the Toledo, Columbus & Ohio River; Cleveland, Akron & Cincinnati; Cincinnati, Lebanon & Northern; Pittsburgh, Ohio Valley & Cincinnati; Englewood Connecting; South Chicago & Southern; Indianapolis & Frankfort; Louisville Bridge & Terminal Co.; Wheeling Terminal Company and Ohio Connecting.

Panhandle Lease Opposed.—The Continental Insurance Company, of New York, has filed a bill in equity in the Federal Court at Philadelphia, seeking to restrain the 999-year lease of the Pittsburgh, Cincinnati, Chicago & St. Louis to the Pennsylvania. The complainant contends that under the proposed lease the Pennsylvania is to pay a rental to the Panhandle sufficient to cover the operating and fixed charges, and the common stockholders are to receive dividends of 4 per cent for five years and 5 per cent thereafter. It is asserted that earnings last year were sufficient to pay 6 per cent.

Dividends Declared

Fonda, Johnstown & Gloversville.—Preferred, 1½ per cent, quarterly, payable September 15 tc holders of record September 5.

New Orleans, Texas & Mexico.—1½ per cent, quarterly, payable September 1 to holders of record August 25.

Erie & Pittsburgh—1¾ per cent., payable September 9 to holders of record August 31.

Trend of Railway Stock and Bond Prices

	Aug. 22	Last Week	Last Year
Average price of 20 representative railway stocks	73.64	70.61	54.54
Average price of 20 representative railway bonds	89.67	88.65	75.34

FREE TRANSPORTATION BY EXPRESS COMPANIES of merchandise for their employees is unlawful; and this point, decided by the Commission in 1918, and by the Supreme Court in 1909 is reaffirmed in a decision handed down on July 10, last. The case of 1918 was reopened at the request of the American Railway Express Company, which asked to have the benefit of an amendment to the law, made in 1910, under which the prohibition of free passes was modified by a provision that it should not prohibit the privilege of "passes or franks . . ." This was the first use in the law of the term "frank." The proviso was introduced, however, for the benefit of telegraph and telephone companies, and the Commission holds that it does not apply to franks issued for the transportation of merchandise. Although the word is one commonly used for merchandise passes, Congress in discussing the bill which became law in 1910, rejected a clause allowing express companies to carry packages free for employees.

Photo by Keystone

After an Accident Near Laurel, Md.

Railway Officers

Executive

C. W. Snider has been elected secretary of the Wichita Falls & Southern, succeeding **L. F. Linney. O. B. Womach,** auditor, has also been appointed assistant secretary.

Financial, Legal and Accounting

A. E. Delf, assistant comptroller of the Duluth, South Shore & Atlantic, has been promoted to comptroller with headquarters at Marquette, Mich.

W. C. Chisholm, general solicitor of the Grand Trunk, has been placed at the head of the legal department, succeeding W. H. Biggar, vice-president and general counsel, deceased.

H. H. Larimore, assistant general attorney of the Missouri Pacific with headquarters at St. Louis, Mo., has been appointed general attorney and interstate commerce counsel with the same headquarters.

C. G. Hurlbut, traveling agent of the Chicago, Milwaukee & St. Paul, with headquarters at Minneapolis, Minn., has been appointed assistant freight claim agent, with headquarters at Seattle, Wash., succeeding **H. Schroeder,** resigned.

W. F. West, an attorney with the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, has been appointed general solicitor with the same headquarters. **E. M. Smith,** has been appointed general land and tax attorney, with headquarters at Cleveland. **C. C. Collister** has been appointed general attorney.

NEW GRAND TRUNK EXECUTIVE

At a meeting of the board of the Grand Trunk Railway System held in Montreal on August 17, W. D. Robb was appointed ranking vice-president of the company with the title of vice-president and general manager. Mr. Robb will take up the duties of Howard G. Kelley, whose resignation as president of the railway is announced.

H. G. Kelley

The official statement issued at the close of the meeting of the board was as follows:

"The chairman, Sir Joseph Flavelle, laid before the meeting a copy of an order-in-council approved on the 14th of August, 1922, accepting the resignation of Mr. Howard G. Kelley as a director of the company, and appointing Graham A. Bell, deputy minister of railways, in his place. Inasmuch as Mr. Kelley's resignation from the board of directors has, under the railway act, the effect of rendering vacant the position of president of the company, it was thereupon resolved that W. D. Robb shall be the ranking vice-president of the company with the title of vice-president and general manager, and shall exercise the authority and perform the duties hitherto exercised and performed by the president."

Howard G. Kelley has been connected with the Grand Trunk System since October 1, 1911, and president since September 1, 1917. He was born on January 12, 1858, at Philadelphia, Pa. He graduated from the Polytechnic College of Pennsylvania and began railroad work in 1881 as assistant engineer on location and construction of the Northern Pacific. In 1884 he left

that road and engaged for a time in mining. Three years later he joined the St. Louis Southwestern as resident engineer and superintendent of bridges and buildings. Two years after he was made chief engineer. On March 1, 1898, he became consulting engineer of the St. Louis Southwestern and also chief engineer of the Minneapolis & St. Louis. On July 4, 1907, Mr. Kelley was appointed chief engineer of the Grand Trunk System and on October 1, 1911, was elected vice-president in charge of construction, operation and maintenance. On September 1, 1917, he was elected president of the Grand Trunk. He also became, at the same time, president of the Grand Trunk Pacific and chairman of the board of the Central Vermont. In May, 1920, Mr. Kelley became chairman of the committee of management for the co-ordination of the Grand Trunk Railway with the Canadian Government System.

W. D. Robb is the first native born Canadian to be called upon to occupy the chief executive office on the Grand Trunk Railway System. He is also the first chief executive of the Grand Trunk to have risen step by step, with unbroken service, from an apprenticeship in the company. Mr. Robb was born at Longueuil, Quebec, in 1857, his father having come to Canada from Scotland to join the Grand Trunk in its construction stage. He received his early education at Sherbrooke Academy and at St. Francis College, Richmond, Que. He began his career with the Grand Trunk in 1871 as an apprentice machinist. He was appointed night foreman at the Montreal shops in 1883, and was promoted to the position of foreman at Belleville in charge of the motive power and car department in the same year. In 1897, he was appointed master mechanic of the middle division with headquarters at London, Ont., and in 1901 was made acting superintendent of motive power at Montreal. Mr. Robb was promoted to the office of superintendent of motive power in 1902, a position which he occupied until his appointment in 1917 as vice-president in charge of motive power, car department and machinery. His jurisdiction was extended in 1918 to take in the operating, maintenance and construction departments of the system.

W. D. Robb

Operating

O. W. Stewart has been appointed acting trainmaster of the Chicago, Milwaukee & St. Paul, with headquarters at Red Wing, Minn., succeeding **F. M. Corbett,** transferred.

J. A. Shepherd, assistant to the general manager of the Kansas City, Mexico & Orient, has been appointed superintendent of car service with headquarters at Wichita, Kan.

W. D. Dilley, assistant superintendent of the Louisville, Cincinnati and Lexington division of the Louisville & Nashville with headquarters at Louisville, Ky., has been promoted to superintendent with the same headquarters, succeeding **C. W. Bradshaw.**

Traffic

W. C. Thorn, city passenger agent of the Great Northern with headquarters at St. Paul, has been promoted to district passenger agent with the same headquarters.

J. E. Roberts has been appointed freight claim agent of the Southern Pacific of Mexico with headquarters at Guaymas, Sonora, Mexico, succeeding **L. W. Mayhood.**

F. D. Wilson, traveling freight and passenger agent of the Union Pacific with headquarters at Reno, Nev., has been promoted to general agent with the same headquarters.

P. B. Miller has been appointed general agent of the Green Bay & Western; the Kewaunee, Green Bay & Western and the Ahnapee & Western, with headquarters at Seattle, Wash.

C. C. Treueb, city passenger agent of the Pennsylvania, with headquarters at Chicago, has been promoted to division passenger agent with headquarters at Detroit, Mich., effective September 1. **A. B. Smith,** district passenger representative with headquarters at Chicago, has been promoted to division freight agent with headquarters at Wheeling, West Va.

Mechanical

W. R. Meeder has been appointed master mechanic of the Missouri & North Arkansas with headquarters at Harrison, Ark., effective August 12, succeeding C. W. Bugbee, who has resigned.

F. W. Boardman, fuel supervisor of the Texas & Pacific with headquarters at Dallas, Tex., has been appointed general master mechanic with the same headquarters. He is succeeded by **L. E. Dix.**

H. Englebright, master car repairer of the Southern Pacific at West Oakland, Cal., has recently retired from active service after 52 years of continuous service with the same road. Born in New Bedford, Mass., June 10, 1852, Mr. Englebright was taken by his parents to California at the age of five when the gold mines were still the dominant industry in that state. He entered the service of the old California Pacific as a blacksmith apprentice in 1869 and worked at this trade at various points until 1892 when he was appointed roundhouse and car foreman at Fresno, Cal. He was appointed general car foreman at San Francisco in 1898 and master car repairer at Oakland, Cal., in 1900, which position he held continuously until his retirement after an interesting experience which has seen the linking of the west to the east by the first transcontinental line, the development of motive power from 35-ton to 225-ton engines and the introduction and subsequent universal use of the automatic air brake, of which device he has made a particular study.

H. Englebright

Engineering, Maintenance of Way and Signaling

E. B. Sloan has been appointed chief engineer of the Southern Pacific of Mexico with headquarters at Empalme, Sonora, Mexico, succeeding C. K. Bowen, resigned.

H. C. Phillips has been appointed valuation engineer of the Midland Valley, with headquarters at Chicago and Muskogee, Okla. **L. A. Hodgson** has been appointed assistant valuation engineer, with headquarters at Muskogee, Okla., effective August 9.

J. B. Pope has been appointed consulting valuation engineer of the Southern Pacific with headquarters at San Francisco, Cal. **G. E. B. Welles** has been appointed engineer of land valuation. **J. H. Baker** has been appointed assistant engineer of valuation.

E. M. Hastings, principal assistant engineer of the Richmond, Fredericksburg & Potomac, has been promoted to chief engineer with headquarters at Richmond, Va. **C. E. Dare** has been appointed engineer maintenance of way with headquarters at Alexandria, Va., effective August 15.

Purchasing and Stores

George Kefer, chief clerk in the purchasing department of the Long Island, has been appointed purchasing agent succeeding H. B. Hodges, retired. Effective September 1.

Harrison B. Hodges, purchasing agent for the Long Island at Jamaica, N. Y., who will retire on September 1 under the pension rules of the company, has been purchasing agent of this road for the past 25 years. He was born at Barre, Mass., on August 14, 1858, and after completing his grammar school education he attended the Boston Latin School and then specialized in the study of chemistry at the Universities of Leipsic, Heidelberg and Bonn in Germany. He also studied the engineering side of chemistry and building construction at Polytechnicum in Aix-la-Chapel. He was then for five years instructor in chemistry and German at the Harvard University. In 1886 Mr. Hodges began railway work as chemist and superintendent of tests on the Union Pacific, remaining with that road until 1892 when he went to the Baltimore & Ohio as engineer of tests. In 1895 he was appointed superintendent of tests on the Southern Railway and on January 1, 1897 he became purchasing agent of the Long Island Railroad.

H. B. Hodges

Obituary

George E. Simpson, general supervisor of transportation of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, whose death on August 16 was reported in the *Railway Age* of August 19, was born on May 25, 1847, at Concord, N. H. Upon completing his course of study in the public schools of that city, he entered railway service with the Chicago, Burlington & Quincy as ticket agent and operator, with headquarters at Buda, Ill. He was promoted to chief train dispatcher, with headquarters at Galesburg, Ill., and held this position until May 1, 1882, when he became superintendent of telegraph of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis. On October 1, 1888, he was promoted to superintendent of transportation, with headquarters at Milwaukee and Chicago. February 1, 1913, he was made supervisor of transportation, with headquarters at Chicago, which position he held until the time of his death as noted above. Mr. Simpson was a member of the general committee on transportation of the American Railway Association and was also a member of the executive committee of the Western Demurrage & Storage Bureau.

G. E. Simpson

Roy L. Stall, assistant general passenger agent of the Pennsylvania with headquarters at Pittsburgh, Pa., died suddenly in that city on August 22. Mr. Stall was formerly stationed in New York as district passenger agent for several years.

H. G. Herbel, general attorney of the Missouri Pacific, with headquarters at St. Louis, Mo., died August 11 after a short illness.

W. A. Drake, assistant to the vice president of the Atchison, Topeka & Santa Fe, with headquarters at Prescott, Ariz., died August 19.

William Cross, formerly assistant to the second vice president of the Canadian Pacific, with headquarters at Winnipeg, Man., died at his home in that city on August 16. Mr. Cross was born in 1842 at Birkenhead, England, and entered the employ of the Canadian Pacific in 1863. From that date to 1882 he was consecutively journeyman and foreman of the erecting shops at Montreal. He was then promoted to master mechanic of the Eastern division where he remained until 1887 when he was transferred to the Western division. From April 1, 1900, to November 1, 1901, he was consulting mechanical engineer of the same division. On the latter date he was appointed engineer of tests and continued in this capacity until February, 1904, when he was promoted to assistant to the second vice president in charge of mechanical matters west of Ft. William, Ont. He retired on January 1, 1908.

Edwin Chamberlain, assistant engineer of the Philadelphia & Reading, died on August 15. Mr. Chamberlain was born in Philadelphia, Pa., on September 30, 1854. He was educated in the public schools of Philadelphia, the Lackawanna School, Scranton, Pa., and entered the scientific department of Lafayette College, Easton, Pa., in the class of 1880. In the fall of that year he entered the service of the Philadelphia & Reading, engineering department, and in March, 1883, he was appointed division road master at Reading, Pa., subsequently serving as division engineer until 1886. He was then transferred to the Philadelphia division where he remained until January, 1887, when he was transferred to the chief engineer's office and made surveys for the extension to Bound Brook, N. J. In 1888 he left railroad work but the following year returned in charge of location and construction work of various extensions of the Reading. In 1892 and 1893 he was engaged upon surveys and report for an electric railroad between Trenton and Paterson, N. J., and between Raritan and New Brunswick, also reconnaissance and report for a steam road between Mahaffey and the Youghiogheny river in Indiana and Westmoreland counties, Pa. He subsequently served as city engineer at Reading, Pa., and from 1897 to 1898 was engaged on the enlargement and improvement of the water supply of the City of Binghamton, N. Y. He returned to the Reading in December, 1899, making surveys for the Reading Belt Railroad, and had charge of the construction work. From 1902 to 1904 he had charge of the construction of the Norristown Connecting Railroad, including the bridging of the Schuylkill river at Norristown, and then for two years was in charge of the construction of the New York Short Line between Cheltenham and Neshaminy Falls, Pa., together with the relocation and double-tracking of the Philadelphia, Newtown & New York between Olney and Cheltenham. From 1906 to the time of his death he was engaged in the elimination of grade crossings in Philadelphia.

E. Chamberlain

Frederick G. Sherman, superintendent of telegraph of the Central of New Jersey, with headquarters at Jersey City, N. J., died on August 20 at his summer home in Pulaski, N. Y.